

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: 28 Units

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

- Prerequisites (3 units).
- Upper-Division Requirements (17 units).
- Upper-Division Electives (8 units) selected on advisement. Units may be in Astronomy, Physics, Geosciences, Mathematics, or related subjects. No more than 3 units of 600-level courses may count towards elective units.

University Electives: 17 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	Introduction to Astronomy (Major Lower-Division Prerequisite, B1)	3
MATH 245	Elementary Differential Equations and Linear Algebra (Hidden Prerequisite for PHYS 320)	3
PHYS 320 & PHYS 321	Modern Physics I and Modern Physics Laboratory (Major Upper-Division Core)	5
GE Area UD-B: Upper-Division Physical and/or Life Sciences		3
University Elective		2
		Units
		16
Second Semester		
ASTR 300	Stars, Planets, and the Milky Way (Major Upper-Division Core)	3
ASTR 340GW	The Big Bang - GEAR (Major Upper-Division Core)	3
Major Elective (8 units) ¹		4

U.S. and California Government (http://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg) or University Elective if US/CA Government met before transfer		3
US History (http://bulletin.sfsu.edu/undergraduate-education/american-institutions/#USHaGR) or University Elective if US History met in transfer		3
	Units	16
Third Semester		
ASTR 301	Observational Astronomy Laboratory (Major Upper-Division Core)	2
Major Elective (8 units) ¹		4
GE Area UD-C: Upper-Division Arts and/or Humanities		3
University Elective – Take Two		6
	Units	15
Fourth Semester		
ASTR 470	Observational Techniques in Astronomy (Major Upper-Division Core)	3
PHYS 695	Culminating Experience in Physics (Major Upper-Division Core)	1
GE Area UD-D: Upper-Division Social Sciences		3
University Elective - Take Two		6
	Units	13
	Total Units	60

¹ **Major Elective (8 units)**

At least 8 units of upper-division courses in Astronomy, Physics, Geosciences, Mathematics, or related subjects, selected on advisement. No more than 3 units of 600 level courses may count toward this requirement.