

BACHELOR OF SCIENCE IN PHYSICS – PHYS ASSOCIATE DEGREE FOR TRANSFER 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.**

Course	Title	Units
First Semester		
HIST 470 or HIST 471	The U.S. Constitution to 1896 ¹ or The U.S. Constitution Since 1896	3
MATH 245 or MATH 376	Elementary Differential Equations and Linear Algebra ^{2,3} or Ordinary Differential Equations I	3
PHYS 320 & PHYS 321	Modern Physics I and Modern Physics Laboratory ⁴	5
GE Area UD–B: Upper Division Physical and/or Life Sciences ⁵		3
		Units
		14
Second Semester		
CSC 309	Computer Programming for Scientists and Engineers ⁶	3
RRS 600/HIST 466 or AIS 460	History of People of Color in the U.S. ⁷ or Power and Politics in American Indian History	3
PHYS 360	Electricity and Magnetism I ^{8,9}	3
PHYS 370	Thermodynamics and Statistical Mechanics ⁸	3
University Elective		3
		Units
		15
Third Semester		
PHYS 430	Quantum Mechanics I ⁴	3
PHYS 460	Electricity and Magnetism II ⁴	3
PHYS 490	Physics Project Laboratory ⁴	2
Major Elective – Take Two		7
		Units
		15
Fourth Semester		
PHYS 431	Quantum Mechanics II ⁸	3
PHYS 457	Introduction to Analog Electronics ⁸	4
PHYS 491GW	Advanced Laboratory II - GVAR ⁸	1
PHYS 695	Culminating Experience in Physics ⁸	1
GE Area UD–B: Upper Division Physical and/or Life Sciences		3
or University Elective if UD-B was already satisfied		
University Elective		4
		Units
		16
		Total Units
		60

- 1 HIST 470 and HIST 471 satisfy GE UD-C and US/CA Government.
- 2 Take PHYS 330 if MATH 245 complete.
- 3 A course in differential equations and linear algebra is required before taking PHYS 330 and PHYS 385. Students transferring in without an equivalent to MATH 245 must delay taking PHYS 330 and PHYS 385 until the following Fall semester, which will affect other elements of this sample advising plan. Overall time for degree completion will be extended. *Students in this situation should consult with a department advisor for an alternate advising plan.*
- 4 PHYS 320/PHYS 321, PHYS 430, PHYS 460 and PHYS 490 are offered fall semesters only.
- 5 Take PHYS 385 if MATH 245 complete.
- 6 Students proficient in computer programming may substitute upper division units in astronomy, mathematics, or physics, subject to department chair's approval. PHYS 325, offered in spring semesters, is a recommended substitute.
- 7 AIS 460 and RRS 600/HIST 466 also satisfy Upper Division GE: UD-D and US History.
- 8 PHYS 360, PHYS 370, PHYS 431, PHYS 457 and PHYS 695 offered spring semesters only.
- 9 PHYS 385 must be taken before PHYS 360.

To Do at SF State:

Enough total units to reach 120 minimum for graduation; 40 units minimum at the upper-division level; to include the following:

University-Wide Requirements: 9-15 Units

- American Institutions (0-6 units): If not met before transfer, refer to next bullet for advice.
- Upper-Division GE (9 units): Courses may satisfy the US History or US/CA Government requirements, and UD-C or UD-D at the same time, if approved for multiple areas.
- Students entering the major with the AS-T in Physics are not required to fulfill SF State Studies or Complementary Studies requirements.

Physics B.S. Major: 44-47 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 if MATH 245 or equivalent not completed before transfer).
- Upper-Division Requirements (34 units)
- Upper-Division Electives (10 units): May be units in astronomy, physics, mathematics, or related sciences.

University Electives: 10 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.