

Physics Department

DEGREES

Physics (AS-T)
Physics (AS)

COURSES

PHYS (Physics)

CONTACT INFORMATION:

School of Mathematics and Sciences

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P.A.C.E. - SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS - A PATHWAY FOR ACADEMIC AND CAREER EXCELLENCE AT SOLANO COMMUNITY COLLEGE

ARE YOU THE KIND OF PERSON WHO...

- ...desires to observe, learn, analyze, evaluate, or solve problems?
- ...enjoys to question and explore physical or biological happenings?
- ...likes to work hands-on with objects, machines, tools, plants, or animals?
- ...is interested in math and/or thinking analytically to solve complex problems?

Guided Pathways:

PHYSICS AS-T

Associate in Science for Transfer | GE Pattern: IGETC | Program Total Units: 63

This program map represents **one possible pathway**. See a counselor to create a customized education plan. Map is for the 2021-2022 catalog year.

Career Paths

Physics Teacher • Physicist • Nanosystems Engineer •
Atmospheric, Earth, Marine, or Space Scientist

What your potential plan could look like...

1 First Semester

Total Recommended Units: 16

- ENGL 001 College Composition (IGETC 1A) 4 units
- LR 010 Introduction to Library Research 1 unit
- IGETC 4 3 units
- ART 012, CINA 011, MUSC 013, or THEA 013 (IGETC 3A/Cross-Cultural) 3 units
- MATH 020 Analytic Geometry and Calculus I (IGETC 2) 5 units

3 Third Semester

Total Recommended Units: 13

- COMM 006 Argumentation and Debate 5 units
- PHYS 007 Physics for Science & Engineering (Offered In Fall Only) 5 units
- PLSC 001 or 005 (IGETC 4/American Institutions) 3 units

Square, darker color: Required Courses/
Courses in Discipline

Rounded, lighter color: GE Courses/Categories

2 Second Semester

Total Recommended Units: 14

- ENGL 002 or 004 (IGETC 1B) 4 units
- MATH 021 Analytic Geometry and Calculus II 5 units
- PHYS 006 Physics for Science and Engineering (IGETC 5A/5C) 5 units

4 Fourth Semester

Total Recommended Units: 12

- PHYS 008 Physics for Science & Engineering (Offered In Spring Only) 5 units
- IGETC AREA 3A or 3B 3 units
- IGETC AREA 5B 3 units
- IGETC AREA 4 3 units

Courses Below May Be Taken Any Time (Fall, Spring or Summer)

Total Recommended Units: 6

- COMM 001, 002, or 006 (IGETC 1C) 3 units
- HIST 017, 018, 028, 029, or 037 (CSU GE C2/American Institutions) 3 units

Physics

Associate in Science in Physics for Transfer (ADT: A.S.-T)

Program Description

The focus of this program is on developing an understanding of and appreciation for the basic laws of our physical universe. This is done largely through the development of conceptual understanding, problem-solving skills, and laboratory investigations. The PHYS 006, 007, 008 sequence is a three-semester offering in introductory physics requiring math through calculus. This sequence satisfies the lower division physics requirement for majors in physics, chemistry, geology or other physical sciences, and engineering. PHYS 006 is a study of mechanics, gravitation, vibration and fluids. In PHYS 007, students will cover the topics of electricity, magnetism, wave motion, and sound. In PHYS 008, students will cover heat, optics, relativity, and modern physics. Students will learn to analyze and solve problems appropriate for this level. Experiments relating to the topics covered will be performed.

The Associate in Science in Physics for Transfer, will prepare students for a baccalaureate degree in physics. It consists of the courses necessary for beginning physics students to be able to succeed in the upper division physics courses that they will encounter in the CSU system, or any institution (such as the UC system) that grants an undergraduate physics degree. Students who earn the Associate in Science will receive guaranteed priority admission to the CSU system, but not to a particular campus or major. Once admitted the student will only be required to complete 60 additional upper-division units to qualify for a bachelor's degree.

To earn the Associate in Science in Physics for Transfer, students must:

1. Complete 60 semester units that are eligible for transfer to the California State University, including both of the following:
 - a. The Intersegmental General Education Transfer Curriculum (IGETC) or the California State University General Education – Breadth Requirements.
 - b. A minimum of 18 semester units or 27 quarter units in a major or area of emphasis, as determined by the community college district.
2. Obtain a minimum grade point average of 2.0.

Program Outcomes

Students who complete the Associate in Science in Physics for Transfer will be able to:

1. Demonstrate analytical and/or conceptual problem solving skills related to the study of Physics.
2. Carry out experiments and critically assess data. Students will learn the role of hypothesis, measurement, and analysis in the development of scientific theory, as evidenced by laboratory reports.
3. Write a professional scientific laboratory report.

REQUIRED COURSES	Units
PHYS 006 Physics for Science and Engineering.....	5
PHYS 007 Physics for Science and Engineering.....	5
PHYS 008 Physics for Science and Engineering.....	5
MATH 020 Analytic Geometry and Calculus I	5
MATH 021 Analytic Geometry and Calculus II	5
MATH 022 Analytic Geometry and Calculus III	4
Required Major Total Units.....	29

Physics

Physics

Associate in Science

Program Description

The focus of this program is on developing an understanding of and appreciation for the basic laws of our physical universe. This is done largely through the development of conceptual understanding, problem solving skills, and laboratory investigations.

The Associate in Science can be obtained by completing the 35-39-unit major, General Education, and electives as needed to complete a minimum of 60 units. All courses for this major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes

Students who complete the Physics Associate in Science will be able to:

1. Demonstrate analytical and/or conceptual problem solving skills related to the study of Physics.
2. Carry out experiments and critically assess data. Students will learn the role of hypothesis, measurement, and analysis in the development of scientific theory, as evidenced by laboratory reports.
3. Write a professional scientific laboratory report.

REQUIRED COURSES Units

PHYS 006 Physics for Science and Engineering	5
PHYS 007 Physics for Science and Engineering	5
PHYS 008 Physics for Science and Engineering	5
MATH 020 Analytic Geometry and Calculus I	5
MATH 021 Analytic Geometry and Calculus II	5
MATH 023 Differential Equations	4
One course from Biological Science	3-5
One course from Physical Science	3-5

Required Major Total Units35-39

Biological Science (select one course) Units

BIO 002 Principles of Cell and Molecular Biology	5
BIO 003 Evolution, Ecology & Biodiversity	5
BIO 005 Human Physiology	5
BIO 012 Environmental Science	3
BIO 014 Principles of Microbiology	4
BIO 015 Introduction to Biology	4
BIO 016 Introduction to Human Biology	3
BIO 018 Biology of Sex	3

Physical Science (select one course) Units

ASTR 010 General Astronomy	3
ASTR 020 Astronomy Laboratory	1
ASTR 030 The Solar System	3
ASTR 040 Stars, Galaxies, and Cosmology	3
CHEM 001 General Chemistry I	5
CHEM 002 General Chemistry II	5
CHEM 003 Organic Chemistry I	5
CHEM 004 Organic Chemistry II	5
CHEM 010 Intermediate Chemistry	4
CHEM 011 Basic Organic Chemistry and Biochemistry	4
GEOG 001 Physical Geography	3
GEOG 001L Physical Geography Laboratory	1
GEOL 001 Physical Geology	3
GEOL 002 Geology Laboratory	1
GEOL 005 Geology of California	3
PHSC 012 Introduction to the Principles of Physical Science	4