

Area: Science and Engineering
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Degree: A.S. - Physical Science/Mathematics

Physical Science/Mathematics Degree

This program provides a broad study in fields of physical science and mathematics. It provides a good foundation for transfer to a four-year program in science.

Student Learning Outcomes

Upon completion of this program, the student will be able to:

- Recognize and utilize correctly the terminology of math, statistics and/or science.
- Analyze and interpret data, charts and graphs using quantitative and qualitative methods.
- Recognize and construct valid arguments using deductive and inductive reasoning.
- Evaluate new and accepted ideas about the natural universe using testable methodology.

Career Opportunities

This program is intended to provide a broad foundation of skills and knowledge to help students succeed in the completion of a bachelor's degree in a variety of science, math or engineering-related areas.

Requirements for Degree Major 18 units

A minimum of 18 units from the following: 18
 Transferable courses must be selected from the following areas: astronomy, chemistry, engineering, geology, mathematics, physical geography, physical science, physics, and statistics.

Associate Degree Requirements: The Physical Science/Mathematics Associate in Science (A.S.) Degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See ARC graduation requirements.

Physical Science

PS 300 Introduction to Physical Science 3 Units

Advisory: MATH 32
General Education: AA/AS Area IV; CSU Area B1; IGETC Area 5A
Course Transferable to UC/CSU
Hours: 54 hours LEC

This course covers the fundamental concepts of astronomy, geology, physics, chemistry, and meteorology. It is designed for the student with little or no science background. It is not recommended for science, mathematics, or engineering majors.

PS 301 Physical Science Laboratory 1 Unit

Corequisite: PS 300
Advisory: MATH 100
General Education: AA/AS Area IV; CSU Area B1; CSU Area B3; IGETC Area 5A
Course Transferable to UC/CSU
Hours: 54 hours LAB

This laboratory course provides hands-on experiments in several disciplines in the physical sciences, including physics, chemistry, earth science, and astronomy.

Physics

PHYS 310 Conceptual Physics 3 Units

Advisory: MATH 100
General Education: AA/AS Area IV; CSU Area B1; IGETC Area 5A
Course Transferable to UC/CSU
Hours: 54 hours LEC

This is a course for liberal arts majors and students who have not taken a course in physics. It includes selected topics in motion, gravity, heat, sound, electricity, magnetism, light, and atomic and nuclear physics.

PHYS 311 Basic Physics 3 Units

Prerequisite: MATH 330 with a grade of "C" or better
General Education: AA/AS Area IV; CSU Area B1; IGETC Area 5A
Course Transferable to UC/CSU
Hours: 54 hours LEC

This is a survey course for science majors who have had no previous course in physics and who plan to continue with PHYS 410 or 350. Emphasis is on problem solving. Students who have taken PHYS 310 cannot get UC transfer credit for this course.

PHYS 312 Conceptual Physics Laboratory 1 Unit

Corequisite: PHYS 310
General Education: AA/AS Area IV; CSU Area B1; CSU Area B3; IGETC Area 5A
Course Transferable to UC/CSU
Hours: 54 hours LAB

Together with PHYS 310, this course satisfies the UC and CSU general education science lab requirement. Emphasis is placed on scientific observation and measurement and their relationship to physical concepts. This course provides concrete, hands-on observation activities and interpretation of data in a variety of experimental situations.

PHYS 350 General Physics 4 Units

Prerequisite: MATH 330 with a grade of "C" or better

Advisory: PHYS 311

General Education: AA/AS Area IV; CSU Area B1; CSU Area B3; IGETC Area 5A

Course Transferable to UC/CSU

Hours: 54 hours LEC; 54 hours LAB

This trigonometry-based physics course covers the mechanics of particles, rigid bodies, and fluids. It also covers mechanical waves, sound, heat, and thermodynamics. The PHYS 350/360 series is designed for biological science students, including those in pre-medical, pre-dental, agricultural, and forestry programs.

PHYS 360 General Physics 4 Units

Prerequisite: PHYS 350 with a grade of "C" or better

Course Transferable to UC/CSU

Hours: 54 hours LEC; 54 hours LAB

This trigonometry-based physics course covers electricity, magnetism, basic electric circuit theory, optics, wave behavior, and modern physics. The PHYS 350/360 series is designed for biological science students, including those in pre-medical, pre-dental, agricultural, and forestry programs.

PHYS 410 Mechanics of Solids and Fluids 5 Units

Prerequisite: MATH 400 with a grade of "C" or better

Corequisite: MATH 401

Advisory: PHYS 311

General Education: AA/AS Area IV; CSU Area B1; CSU Area B3; IGETC Area 5A

Course Transferable to UC/CSU

Hours: 72 hours LEC; 54 hours LAB

This calculus-based physics course covers mechanics of particles, rigid bodies, and fluids. The PHYS 410, 421, 431 sequence is required for majors in physics, chemistry, or engineering. The course includes lecture, laboratory, and problem discussion sections.

PHYS 421 Electricity and Magnetism 4 Units

Prerequisite: PHYS 410 with a grade of "C" or better

Advisory: MATH 402

Course Transferable to UC/CSU

Hours: 54 hours LEC; 54 hours LAB

This calculus-based physics course is an in-depth treatment of electricity and magnetism. It involves problem solving with an emphasis on physics problems that require integral calculus.

PHYS 431 Heat, Waves, Light and Modern Physics 4 Units

Prerequisite: PHYS 410 with a grade of "C" or better

Advisory: MATH 402

Course Transferable to UC/CSU

Hours: 54 hours LEC; 54 hours LAB

This calculus-based physics course explores the fundamental theories of thermodynamics, waves, optics, and modern physics. Topics include heat, temperature, kinetic theory, waves, sound, light reflection and refraction, optics, interference, diffraction, atomic theory, and nuclear physics.