**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.

**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**

A minimum of 18 units from the following:

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 complements PS 300. Together with PS 300, 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 from a variety of experimental environments.

### PHY 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, atomic and nuclear physics.

### PHY 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 PHY 410 or 350. Emphasis is on problem solving. Students who have taken PHY 310 cannot get UC transfer credit for PHY 311.

### PHY 312 Conceptual Physics Laboratory 1 Unit

*Corequisite: PHY 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

This laboratory course complements PHY 310. Together with PHY 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 from a variety of experimental environments.

### PHY 350 General Physics 4 Units

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

**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

Topics in this course include electric charge, electric fields, AC and DC circuit theory, electromagnetism, optics, wave theory and atomic physics. It is designed for biological science students, including those in pre-medical, pre-dental, agricultural and forestry programs. (CAN PHY 4); (PHYS SEQ A)
**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 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 course covers an in-depth treatment of electricity and magnetism. It involves problem solving with an emphasis on physics problems that require integral calculus. (CAN PHYS 12); (PHYS SEQ B).

**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 course explores the fundamental theories of thermodynamics, waves, optics, and modern physics: heat, temperature, kinetic theory, waves, sound, light reflection and refraction, optics, interference, diffraction, atomic theory and nuclear physics.