

Area: Science and Engineering  
 Dean: Rina Roy (Interim)  
 Phone: (916) 484-8107  
 Counseling: (916) 484-8572

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.

### 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. Study of geologic, weather and topographic maps, star charts and use of tools, equipment and methods of science are also covered.

## 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, 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 PHYS 311.

### 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*

This laboratory course complements PHYS 310. 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 from a variety of experimental environments.

### 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 course, the first semester of General Physics, is a transferable course required for life science majors. It includes classical mechanics (including kinematics, statics, dynamics, Newton's laws of motion, energy and momentum conservation, rigid body motion and simple harmonic motion), fluid mechanics, mechanical waves (including sound), and thermodynamics.

### 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*  
 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 PHYS 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:* AAI/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.