

Degree: A.S. - Mathematics & Physical Science

Area: Science and Engineering

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## Mathematics/Physical Science 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.

### Requirements for Degree Major 18 units

A minimum of 18 units from the following: 18

Transfer-level courses selected from:

(1) Science: could be astronomy, and/or chemistry, and/or engineering, and/or geology, and/or physical geography, and/or physical science and/or physics.

And (2) Math: could be mathematics and/or statistics.

**Associate Degree Requirements:** The Mathematics/Physical Science 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

*Prerequisite:* None

*Advisory:* MATH 32.

*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. AA/AS area 3A; CSU area B1; IGETC area 5A.

### PS 301 Physical Science Laboratory 1 Unit

*Prerequisite:* None

*Corequisite:* PS 300.

*Advisory:* MATH 100.

*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. AA/AS area 3A; CSU area B1; IGETC area 5A.

## Physics

### PHYS 310 Conceptual Physics 3 Units

*Prerequisite:* None

*Advisory:* MATH 100.

*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. AA/AS area 3A; CSU area B1; IGETC area 5A.

### PHYS 311 Basic Physics 3 Units

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

*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. AA/AS area 3A; CSU area B1; IGETC area 5A.

### PHYS 312 Conceptual Physics Laboratory 1 Unit

*Prerequisite:* None

*Corequisite:* PHYS 310.

*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 the nature of scientific observation and measurement and their relationship to general physical concepts. This course provides concrete, hands-on observation activities and interpretation of data from a variety of experimental environments. AA/AS area 3A; CSU area B1; IGETC 5A

### PHYS 350 General Physics 4 Units

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

*Advisory:* PHYS 311.

*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. (CAN PHYS 2) (PHYS SEQ A) AA/AS area 3A; CSU area B1; IGETC area 5A

### 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.

*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. (CAN PHYS 8) (PHYS SEQ B) AA/AS area 3A; CSU area B1; IGETC area 5A

### **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**

*Formerly: PHYS 4C*

*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 thermodynamics and heat, statistical mechanics, waves and sound, light, quantum concepts, and nuclear physics. (CAN PHYS 14); (PHYS SEQ B).