

# PHYSICS



Physics, Physical Science, and Astronomy are the sciences that study the universe and its components from the sub-atomic to the macro-scale. Topics range from cosmology to the interactions of atoms.

Physical Science and Astronomy courses are housed in the Physics department. Although no degrees are currently being offered in Astronomy, this course can be used to complete General Education or transfer requirements.

Students studying physics will have an introductory foundation in the field of physics through the study of mechanics, thermodynamics, electricity, magnetism, optics and modern physics. Students will acquire skills and abilities in identifying, formulating and solving physics problems by designing, conducting and analyzing experiments, and critical thinking.

The most common career opportunities with a baccalaureate degree include physics laboratory technician, computer scientist, scientific sales, and high school science teacher.

Transfer requirements in Physics and Astronomy are available in the Counseling Department. In all cases, students should consult with a counselor for specific transfer requirements.

## Contact Information

### Science Division Chair

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### Dean of Science, Mathematics, and Engineering

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## Associate Degree

- Associate in Science in Physics for Transfer (AS-T) (<https://catalog.cos.edu/areas-study/physics/associate-science-physics-transfer-as-t/>)

For a complete list of courses and descriptions visit: COURSES (<https://catalog.cos.edu/course-descriptions/>)

### ASTR 010 Introduction to Astronomy

3unit(s)

Hours: 3 Lecture/Discussion

A survey course covering the basic concepts, theories, history, and laws of astronomy. Emphasis will be given to motions of the moon, sun, and planets; use of astronomical instruments; study of stellar spectra; properties of the stars, and stellar evolution.

### PHYS 020 General Physics 1

5unit(s)

Hours: 4 Lecture/Discussion Hours:

3 Lab

This is the first semester of a two-semester, introductory, non-calculus based physics course. This course includes laboratory experiments in addition to lectures. It is required for premedical, pre dental, prepharmacy, and occasionally science and math students. Topics include kinematics, statics and dynamics of particles and rigid bodies, simple harmonic motion, and thermal physics. (C-ID PHYS105)

**Prerequisites:** MATH 154 or equivalent college course with a minimum grade of C.

### PHYS 021 General Physics 2

5unit(s)

Hours: 4 Lecture/Discussion Hours:

3 Lab

This is the second semester of a two-semester introductory non-calculus based physics course. This course includes laboratory experiments, in addition to lectures. It is required for premedical, pre dental, prepharmacy, and occasionally science and math students. Topics included are electricity and magnetism, optics, modern and nuclear physics. (C-ID PHYS 110)

**Prerequisites:** PHYS 020 or equivalent college course with a minimum grade of C.

### PHYS 055 Physics 1: Mechanics & Waves

4unit(s)

Hours: 3 Lecture/Discussion Hours:

3 Lab

This is the first semester of a three semester introductory calculus-based physics course. It is a fundamental treatment of the general principles of physics for those majoring in engineering and physics. Topics included are statics, kinematics, dynamics of particles and rigid bodies, fluids, mechanical waves, simple harmonic motion and kinetic theory of gases. (C-ID PHYS205)

**Prerequisites:** MATH 066 (may be taken concurrently) and MATH 065 or equivalent college course with a minimum grade of C.

### PHYS 056 Physics 2: E&M and Heat

4unit(s)

Hours: 3 Lecture/Discussion Hours:

3 Lab

This is the second semester of a three-semester introductory calculus-based physics course. It is a fundamental treatment of the general principles of Physics for those majoring in physics and engineering. Topics included are electricity, magnetism, the laws of thermodynamics, heat engines, and entropy.

**Prerequisites:** PHYS 055 and MATH 067 (may be taken concurrently) or MATH 077 or equivalent college course with a minimum grade of C.

### PHYS 057 Physics 3: Modern Physics

5unit(s)

Hours: 4 Lecture/Discussion Hours:

3 Lab

This is the third semester of a three-semester introductory calculus-based physics course. It is a fundamental treatment of the general principles of Physics for those majoring in physics and engineering. Topics included are Geometric and Wave optics, Special Relativity, Lorentz Transformation, Quantum Theory of Atoms, Fission and Fusion, and the Evolution of the Universe. (C-ID PHYS215)

**Prerequisites:** PHYS 056 and MATH 067 or equivalent college course with a minimum grade of C.

**PSCI 020 Physical Science**

**4unit(s)**

Hours: 3 Lecture/Discussion Hours:  
3 Lab

A laboratory course in physical science designed to meet the laboratory science requirement for transfer students who are not science majors. Topics include concepts, theories and principles of physics, chemistry, astronomy and earth science. The course provides opportunities for students to learn reasoning skills and a new way of thinking about their environment. Course will present applications of concepts and theories to topics of current interest.

## **Physics**

MacPherson, Quinn, Ph.D.  
B.S., University of Idaho  
Ph.D., Stanford University

Owens, Lawrence, Ph.D.  
A.S., College Of The Sequoias  
B.S., California State University, Fresno  
M.S., California State University, Fresno  
Ph.D., University Of Texas, Austin

Royster, Marc  
B.S., California State University, Santa Barbara  
Ph.D., California State University, Santa Barbara

Sadeh, Shirin  
B.S., State University Of New York  
M.S., Syracuse University