

# PHYSICS

## Career Opportunities

(Post-bachelors degree necessary in most cases)

Astronaut	Highway Designer
Astronomer	Laser Specialist
Atmospheric Scientist	Low-Temperature Physicist
Biomedical Engineer	Manufacturing Engineer
Chemical Physicist	Medical Technologist
Electro-Optic Engineer	Meteorologist
Fusion Engineer	Nuclear Physicist
Geochemist	Physical Chemist
Geophysicist	Space Scientist

## Faculty

### Full-Time

Michael Bowen

### Part-Time

Caroline Hess

## Physics Courses

### PHYS R101—College Physics 1 5 units

*Prerequisites:* MATH R118A.

*4 hours lecture, 3 hours lab weekly*

This course is an introduction to classical mechanics and thermal physics. Central topics include: Vectors, motion, force, energy, heat, fluids, waves, and sound. The laboratory provides students with opportunities to learn and apply the scientific method through investigations of the phenomena discussed in lecture. It also introduces students to methods of computer-assisted data analysis. The course is designed to meet the needs of liberal arts students and some students majoring in the biological sciences. Field trips may be required. (2)

*Transfer credit:* UC, CSU (CAN: PHYS 2; PHYS SEQ A (PHYS R101 + R102))

### PHYS R102—College Physics 2 5 units

*Prerequisites:* PHYS R101.

*4 hours lecture, 3 hours lab weekly*

This course is an introduction to electromagnetic theory and modern physics. Central topics include: Electricity, magnetism, optics, quantum ideas, atomic and nuclear physics, and special relativity. The laboratory provides students with opportunities to learn and apply the scientific method through investigations of the phenomena discussed in lecture. The course is designed to meet the needs of liberal arts students and some students majoring in the biological sciences. Field trips may be required. (2)

*Transfer credit:* UC, CSU (CAN: PHYS 4; PHYS SEQ A (PHYS R101 + R102))

### PHYS R121—Physics with Calculus 1 5 units

*Prerequisites:* MATH R120.

*4 hours lecture, 3 hours lab weekly*

This course is an introduction to classical mechanics and thermal physics. Central topics include: Vectors, motion, force, energy, heat, fluids, waves, and sound. The laboratory provides students with opportunities to learn and apply the scientific method through investigations of the phenomena discussed in lecture. It also introduces students to methods of computer-assisted data analysis. The course is designed to meet the needs of students majoring in the biological sciences. Field trips may be required.

*Transfer credit:* UC, CSU

### PHYS R122—Physics with Calculus 2 5 units

*Prerequisites:* PHYS R121.

*4 hours lecture, 3 hours lab weekly*

This course is an introduction to electromagnetic theory and modern physics. Central topics include: Electricity, magnetism, optics,

quantum ideas, atomic and nuclear physics, and special relativity. The laboratory provides students with opportunities to learn and apply the scientific method through investigations of the phenomena discussed in lecture. The course is designed to meet the needs of students majoring in the biological sciences. Field trips may be required.

*Transfer credit:* UC, CSU

### PHYS R131\*—Physics for Scientists and Engineers 1 5 units

*Prerequisites:* MATH R120.

*4 hours lecture, 3 hours lab weekly*

This course is an introduction to the statics and dynamics of rigid bodies and ideal fluids. Central topics include: Newton's laws; conservation of energy, linear momentum, and angular momentum; equilibrium of rigid bodies, and oscillatory motion. Although the course emphasizes conceptual understanding, students also learn to apply mathematical techniques such as vector algebra, differential and integral calculus, Taylor series, and linear differential equations to the solution of problems. The laboratory provides students with opportunities to learn and apply the scientific method through investigations of the phenomena discussed in lecture. Field trips may be required.

*Transfer credit:* UC, CSU

### PHYS R132\*—Physics for Scientists and Engineers 2 5 units

*Prerequisites:* PHYS R131 and MATH R121.

*4 hours lecture, 3 hours lab weekly*

This course is an introduction to electricity and magnetism, with emphasis on understanding field theory and the behavior of simple electrical circuits. Central topics include: Gravitational, electric and magnetic fields; the laws of Coulomb, Gauss, Ohm, Kirchhoff, Ampere, Biot-Savart, and Faraday; simple circuit analysis; and the Maxwell equations. Although the course emphasizes conceptual understanding, students also learn to apply mathematical techniques such as vector algebra, vector differentiation and integration, binomial approximations, and linear differential equations to the solution of problems. The laboratory provides students with opportunities to learn and apply the scientific method through investigations of the phenomena discussed in lecture. Field trips may be required.

*Transfer credit:* UC, CSU

### PHYS R133\*—Physics for Scientists and Engineers 3 5 units

*Prerequisites:* PHYS R132 and MATH R122.

*4 hours lecture, 3 hours lab weekly*

This course is an introduction to wave motion (with emphasis placed on the study of sound and electromagnetic wave phenomena), geometrical and physical optics, and thermodynamics. The course also addresses selected topics in quantum mechanics and special relativity at an elementary level. Although the course emphasizes conceptual understanding, students also learn to apply mathematical techniques such as vector calculus, Fourier analysis, numerical approximation, and multi-variable integration to the solution of problems. The laboratory provides students with opportunities to learn and apply the scientific method through investigations of the phenomena discussed in lecture. Field trips may be required.

*Transfer credit:* UC, CSU

### PHYS R199—Directed Studies in Physics 1-3 units

*Prerequisites:* PHYS R131.

*Lecture and/or lab as required by unit formula*

This course is designed for students interested in furthering their knowledge of physics on an independent study basis; assigned problems will involve library, lab, and/or field work. It is appropriate for students majoring in physics, engineering, mathematics, or related fields. Course may be taken two times. (2)

*Transfer credit: CSU*

\*Course numbers have been changed. CAN confirmation is pending.