

Physics

Overview

Physics is the scientific study of fundamental and universal phenomena. It explores the natural relationships that help us understand and predict the motion, organization and interaction of the most basic and measurable constituents of our physical existence. Physics, like all sciences, requires careful and continual observation and testing of its ideas, working hand-in-hand with creativity, imagination and an open mind.

Physics courses include conceptual and general physics, mechanics of solids and fluids, electricity, magnetism, heat, waves, light, and related topics.

Dean

[Devin Horton \(/about-us/contact-us/employee-directory/employee?id=2083239&xid=\)](/about-us/contact-us/employee-directory/employee?id=2083239&xid=)

Phone

(916) 650-2759

Department Chair

[Douglas Copely \(/about-us/contact-us/employee-directory/employee?id=0001609&xid=\)](/about-us/contact-us/employee-directory/employee?id=0001609&xid=)

Email

[copelyd@scc.losrios.edu \(mailto:copelyd@scc.losrios.edu\)](mailto:copelyd@scc.losrios.edu)

Physics (PHYS) Courses

PHYS 310 Conceptual Physics

Units:	3
Hours:	54 hours LEC
Prerequisite:	None.
Advisory:	Pre-algebra or equivalent with a grade of "C-" or better. Students needing a review of mathematical concepts covered in this course should enroll in MATHS 10.
Transferable:	CSU; UC
General Education:	AA/AS Area IV; CSU Area B1; IGETC Area 5A
Catalog Date:	August 1, 2024

This course presents the physical laws that tie together the diverse phenomena of nature. This course uses a descriptive approach, with limited use of basic algebra, to increase the students' understanding of the everyday physical world.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- effectively apply the methodology and philosophy of science.
- effectively apply the fundamental laws of physics.
- use the laws of physics to classify, explain, and predict the behavior of natural phenomena.

PHYS 350 General Physics

Units:	4
Hours:	54 hours LEC; 54 hours LAB
Prerequisite:	High School Trigonometry or a course with equivalent Trigonometry content or MATH 373 with a grade of "C" or better.
Transferable:	CSU; UC
General Education:	AA/AS Area IV; CSU Area B1; CSU Area B3; IGETC Area 5A; IGETC Area 5C
C-ID:	C-ID PHYS 105
Catalog Date:	August 1, 2024

This course is a non-calculus based survey of general physics. It is designed for biological science students, including those in pre-medical, pre-dental, optometry, agricultural, and forestry programs. Topics include kinematics, Newton's Laws, dynamics of rigid bodies, work and energy, momentum, rotational motion, fluids, thermodynamics, and oscillatory motion (including mechanical waves and sound).

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- recognize and demonstrate an understanding of the fundamental principles of general physics.
- apply proper techniques and employ proper analytical thinking skills to solve general physics problems.
- clearly communicate steps taken to achieve a solution.

- collect and analyze experimental data for solving problems related to kinematics, dynamics, fluids, oscillations, and thermodynamics.

PHYS 360 General Physics

Units:	4
Hours:	54 hours LEC; 54 hours LAB
Prerequisite:	PHYS 350 with a grade of "C" or better
Transferable:	CSU; UC
General Education:	AA/AS Area IV; CSU Area B1; CSU Area B3; IGETC Area 5A; IGETC Area 5C
C-ID:	C-ID PHYS 110
Catalog Date:	August 1, 2024

This course is a non-calculus based survey of general physics. It is designed for biological science students, including those in premedical, pre-dental, optometry, agricultural, and forestry programs. Topics include electric charge, electric fields, AC and DC circuit theory, electromagnetism, geometric and wave optics, special relativity, atomic structure, quantum physics, and nuclear physics.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- recognize and demonstrate the fundamental principles of general physics.
- apply proper techniques and employ proper analytical thinking to solve physics problems.
- clearly communicate steps taken to arrive at solutions.
- collect and analyze experimental data for solving problems related to electricity, magnetism, geometric optics, wave nature of light, radioactivity, and quantum physics.

PHYS 410 Mechanics of Solids and Fluids

Units:	5
Hours:	72 hours LEC; 54 hours LAB
Prerequisite:	MATH 400 with a grade of "C" or better
Corequisite:	MATH 401
Transferable:	CSU; UC
General Education:	AA/AS Area IV; CSU Area B1; CSU Area B3; IGETC Area 5A; IGETC Area 5C
C-ID:	C-ID PHYS 205; Part of C-ID PHYS 200S
Catalog Date:	August 1, 2024

Topics covered in this class include linear and rotational motion, Newton's laws, dynamics of rigid bodies, harmonic motion, and fluid statics. This course is for physics, mathematics, chemistry, architecture, and engineering majors. Eighteen (18) hours of the lecture are devoted to discussion sessions.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- recognize the fundamental principles of classical physics of motion.
- analyze physical processes involving particle, fluid, and rigid body motions.
- apply kinematic and dynamic principles of Newton's laws, and conservation principles, to solve problems of motion.
- clearly communicate the process taken to arrive at a solution.

PHYS 420 Electricity and Magnetism

Units:	5
Hours:	72 hours LEC; 54 hours LAB
Prerequisite:	MATH 401 and PHYS 410 with grades of "C" or better
Advisory:	MATH 402
Transferable:	CSU; UC
General Education:	AA/AS Area IV; CSU Area B1; CSU Area B3; IGETC Area 5A; IGETC Area 5C
C-ID:	C-ID PHYS 210; Part of C-ID PHYS 200S
Catalog Date:	August 1, 2024

This course presents an in-depth treatment of electricity and magnetism and stresses problem-solving. Topics covered include charge and electric force, electric fields, electrical potential, magnetism, electromagnetic induction, and DC and AC circuit theory. This course is for physics, mathematics, chemistry, architecture, engineering, and computer science majors. Eighteen (18) hours of the lecture are devoted to discussion sessions.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- recognize and demonstrate an understanding of the fundamental laws of electromagnetism.
- analyze and solve problems involving electromagnetism.
- communicate the steps taken in arriving at solutions to problems.

PHYS 430 Heat, Waves, Light and Modern Physics

Units:	5
Hours:	72 hours LEC; 54 hours LAB
Prerequisite:	MATH 401 and PHYS 410 with grades of "C" or better
Advisory:	MATH 402
Transferable:	CSU; UC
General Education:	AA/AS Area IV; CSU Area B1; CSU Area B3; IGETC Area 5A; IGETC Area 5C
C-ID:	C-ID PHYS 215; Part of C-ID PHYS 200S
Catalog Date:	August 1, 2024

This course examines thermodynamics, wave theory, light and sound, geometrical and physical optics (including lenses and mirrors), quantum physics, and high-energy physics. The treatment of topics would be most appropriate for physics, mathematics, chemistry, architecture, and engineering majors. Eighteen (18) hours of the lecture are devoted to discussion sessions.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- analyze and solve relevant problems in thermodynamics, optics, acoustics, relativity, quantum, and nuclear physics.
- construct experiments and analyze and interpret experimental results.

PHYS 494 Topics in Physics

Units:	0.5 - 4
Hours:	9 - 72 hours LEC
Prerequisite:	None.
Transferable:	CSU
Catalog Date:	August 1, 2024

This course is designed to enable both science and non-science students to learn about recent developments in physics. Selected topics would not include those that are part of current course offerings. UC transfer credit will be awarded only after the course has been evaluated by the enrolling UC campus. The units completed for this course cannot be counted towards the minimum 60 units required for admissions.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- demonstrate knowledge of the concepts and techniques studied in the course
- solve problems related to the concepts studied in the course.

PHYS 495 Independent Studies in Physics

Units:	1 - 3
Hours:	54 - 162 hours LAB
Prerequisite:	None.
Transferable:	CSU
Catalog Date:	August 1, 2024

This course is designed to allow a student or group of students to study selected topics or areas of physics that go beyond the other courses offered by the Physics department. Topics or areas of study are chosen by mutual agreement between the students and the professor overseeing the course.

UC transfer credit will be awarded only after the course has been evaluated by the enrolling UC campus. The units completed for this course cannot be counted towards the minimum 60 units required for admission to UC.

Student Learning Outcomes

Upon completion of this course, the student will be able to:

- Demonstrate a working knowledge of the area of independent study.
- Solve problems within the area of independent study.
- Apply the knowledge acquired from the independent study to problems related to the area of independent study.

PHYS 499 Experimental Offering in Physics

Units:	0.5 - 4
Prerequisite:	None.
Transferable:	CSU
Catalog Date:	August 1, 2024

This is the experimental courses description.

