PHYS C110: CONCEPTUAL PHYSICS

Item	Value
Top Code	190200 - Physics, General
Units	3 Total Units
Hours	54 Total Hours (Lecture Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)
Local General Education (GE)	• CL Option 1 Natural Sciences (CB1)
California General Education Transfer Curriculum (Cal-GETC)	• Cal-GETC 5A Physical Science (5A)
Intersegmental General Education Transfer Curriculum (IGETC)	• IGETC 5A Physical Science (5A)
California State University General Education Breadth (CSU GE-Breadth)	• CSU B1 Physical Science (B1)

Course Description

A survey of the fundamental phenomena and laws in physics related to forces and motion, energy and work, electricity and magnetism, and modern physics that emphasizes conceptual scientific thinking. ADVISORY: A course taught at the level of beginning algebra or appropriate math placement. Transfer Credit: CSU; UC: Credit Limitation: No credit for PHYS C110, PHYS C110L or PHYS C140, CHEM C140 if taken after PHYS C120 or PHYS C185; PHYS C110, PHYS C110L and PHYS C140, CHEM C140 combined: maximum credit, 4 units.

Course Level Student Learning Outcome(s)

1. Describe the following: the relationship between work and energy, the various types of energy, the application of the conservation of energy to conceptual questions.
2. Describe the following: the relation between forces and motion, the characteristics of wave motion, the postulates of special relativity.
3. Describe the principles of electricity, magnetism, and light.

Course Objectives

- 1. Explain the major scientific contributions of great scientists.
- 2. Describe Newtons Laws of Motion and Gravity.
- 3. Explain the rotational dynamics, energy, and force.
- 4. Describe the properties of 3 states of matter.
- 5. Explain the principles of heat and thermodynamics.
- 6. Describe sound, vibrations, and waves.
- 7. Explain electrostatics, electric current, and magnetic fields and forces.
- 8. Describe the properties of light, including reflection, refraction, and diffraction.
- 9. Explain the major concepts of Quantum Mechanics and relativity.
- 10. Describe the similarities and differences among the various theories in physics.

Lecture Content

MECHANICS: Introduction (Physics and Great Physicists) Motion in One and Two Dimensions Laws of Motion Energy, Momentum and Collisions Rotational Motion Gravity Solid, Liquid and Gas HEAT and THERMODYNAMICS: Thermal Physics Energy in Thermal Processes Laws of Thermodynamics SOUND Vibrations and Waves Sound ELECTRICITY and MAGNETISM Electrostatics Electric Current Magnetism LIGHT Properties of Light Reflection and Refraction of Light Light Waves MODERN PHYSICS The Atoms and the Quantum Mechanics Relativity

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)

Instructional Techniques

A variety of instructional techniques will be employed to encompass different student learning styles. These may include, but are not limited to, lecture, discussion, and small group activities. Instruction will be supplemented, where appropriate, by PowerPoint presentations, videos, simulations, and other electronic resources and technologies.

Reading Assignments

Students will complete reading assignments from the textbook as well as any supplemental reading based upon handouts, Internet resources, and assignments from the Coastline Library.

Writing Assignments

Quiz and Test questions, and Discussions will require the student to demonstrate and communicate a qualitative understanding of scientific concepts.

Out-of-class Assignments

Outside of the classroom, students will do the required reading, study for quizzes and exams, and conduct research, where applicable, to prepare for discussions.

Demonstration of Critical Thinking

Students will demonstrate critical thinking through written work as well as active participation in class discussions.

Required Writing, Problem Solving, Skills Demonstration

Conceptually based Problem-Solving will be emphasized in the class through homework assignments, Discussion Forums, and quiz and test questions.

Eligible Disciplines

Physics/Astronomy: Masters degree in physics, astronomy, or astrophysics OR bachelors degree in physics or astronomy AND masters degree in engineering, mathematics, meteorology, or geophysics OR the equivalent. Masters degree required.

Textbooks Resources

1. Required Griffith, T. Brosing, J.. The Physics of Everyday Phenomena, 10th ed. McGraw Hill, 2022 Rationale: -

Other Resources

1. Coastline Library