

PHYS G111: CONCEPTUAL PHYSICS LAB

Item	Value
Curriculum Committee Approval Date	05/02/2023
Top Code	190200 - Physics, General
Units	1 Total Units
Hours	54 Total Hours (Lab 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
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)
California General Education Transfer Curriculum (CaI-GETC)	• CaI-GETC 5C Laboratory Activity (5C)
Intersegmental General Education Transfer Curriculum (IGETC)	• IGETC 5C Laboratory Activity (5C)
California State University General Education Breadth (CSU GE-Breadth)	• CSU B3 Laboratory Activity (B3)

Course Description

This course is designed to supplement PHYS G110. The student will do laboratory exercises which illustrate some of the phenomena discussed in PHYS G110. PREREQUISITE: PHYS G110. Transfer Credit: CSU; UC: Credit Limitation: No credit for PHYS G110, PHYS G111 if taken after PHYS G120 or PHYS G185.

Course Level Student Learning Outcome(s)

1. Course Outcomes
2. Describe various phenomena associated with motion, energy, waves, or electromagnetism.
3. Explain observations based on current physics theory.
4. Generate a written report describing observations.

Course Objectives

- 1. Explain vector addition.
- 2. Relate gravitational force to masses of objects and distance between objects.
- 3. Solve for the direction of motion given multiple forces.
- 4. Describe a model for friction at the molecular level.
- 5. Locate where an object will land given its initial conditions.
- 6. Apply the law of conservation of momentum to solve collision problems.
- 7. Describe the different types of energy.
- 8. Explain basic electricity relationships in series and parallel circuits.
- 9. Use measurements to determine Coulomb's constant.

- 10. List the variables that affect the strength and direction of the electric field for a static arrangement of charges.
- 11. Explain what happens when a magnet moves through an electrical coil at different speeds.

Lecture Content

Not applicable

Lab Content

Vectors Kinematics Forces and Friction Two-Dimensional Projectile Motion Two-Dimensional Collisions Energy Conductivity Coulomb's Law Electric Fields Faraday's Law

Method(s) of Instruction

- Lab (04)

Reading Assignments

Instructor prepared hand-outs.

Writing Assignments

Formal lab report based upon critical thinking (evaluation of data).

Out-of-class Assignments

None required.

Demonstration of Critical Thinking

Students will draw conclusions about the physical world from data collected in lab exercises.

Required Writing, Problem Solving, Skills Demonstration

Formal lab report based upon critical thinking (evaluation of data).

Eligible Disciplines

Physics/Astronomy: Master's degree in physics, astronomy, or astrophysics OR bachelor's degree in physics or astronomy AND master's degree in engineering, mathematics, meteorology, or geophysics OR the equivalent. Master's degree required.

Manuals Resources

1. Gilpin, B. Lab Syllabus, Golden West College, 01-01-2023
2. PASCO Scientific. PASCO Scientific's Physics Labs with Computers, PASCO Scientific, 01-01-2023

Software Resources

1. PhET Simulations. University of Colorado Boulder, 2023 ed.