

# PHYS A111: INTRODUCTORY PHYSICS LABORATORY

Item	Value
Curriculum Committee Approval Date	12/08/2021
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
Grading Policy	Standard Letter (S), • Pass/No Pass (B)
Associate Arts Local General Education (GE)	• OC Physical/Biological Sci - AA (OB)
Associate Science Local General Education (GE)	• OCC Physical/Biological Sci-AS (OSB)
California General Education Transfer Curriculum (Cal-GETC)	• Cal-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

Introductory physics laboratory to complement PHYS A110. Not open to those who hold credit for any other physics laboratory course. PREREQUISITE: PHYS A110 or concurrent enrollment. Transfer Credit: CSU; UC: Credit Limitation: No credit for PHYS A110, PHYS A111 if taken after PHYS A120, PHYS A130 or PHYS A185.

## Course Level Student Learning Outcome(s)

1. Conduct simple experiments using standard scientific methods, evaluate the resulting data, and construct a scientific conclusion in a formal written report.

## Course Objectives

- 1. Observe, examine, and describe selected physical systems and phenomena.
- 2. Use instruments and techniques for data taking.
- 3. Collect data and interpret them graphically and numerically, understanding the concepts of a slope, interpolation, and extrapolation.
- 4. Derive a conclusion about the meaning of experimental results.
- 5. Report data, results and conclusions in a concise format lab report.
- 6. Define experimental scientific terms and concepts precisely.
- 7. Discuss the relevant principles of science and of physics to their peers.

- 8. Analyze and reduce experimental data and define its limits of validity.

## Lecture Content

This is a lab only course.

## Lab Content

1. Maximizing Range of a projectile. 2. Simple harmonic motion of a Spring-Mass system 3. The Simple Pendulum 4. Ideal Gases. Measurement of absolute zero temperature. 5. Resonance and speed of sound 6. Lenses and images 7. Laser light: refraction, diffraction, and interference 8. The Oscilloscope 9. Electromagnetic induction 10. Free Fall 11. Spectroscopy of atoms and molecules 12. Electric field, current, and resistance 13. Buoyancy 14. Ohms Law 15. Statistics 16. Radiation 17. Heat

## Method(s) of Instruction

- Lab (04)

## Instructional Techniques

1. Students are provided with an environment that encourages participation with the instructor, i.e. during the office hours of the instructor as well as during the experimentation in the lab, students have the opportunity to interact with the instructor. 2. Students will perform laboratory experiments to further the understanding of physical concepts.

## Reading Assignments

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## Writing Assignments

To promote critical thinking on each laboratory experiment, a lab report has to be written which contains a critical evaluation of the laboratory results.

## Out-of-class Assignments

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## Demonstration of Critical Thinking

Based on participation in the lab work, and the lab reports.

## Required Writing, Problem Solving, Skills Demonstration

To promote critical thinking on each laboratory experiment, a lab report has to be written which contains a critical evaluation of the laboratory results.

## Other Resources

1. Selected handouts to be provided and distributed by the instructor.