

# PHYS 226: TEAM-BASED RESEARCH PHYSICS II

## Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2023
Credits:	1
Lab Hours:	0
Hours Arranged:	54
Total Student Learning Hours:	54
Prerequisite:	PHYS 201 or PHYS 201H or PHYS 220A or PHYS 225; MATH 151 or MATH 190 or higher.
Strongly Recommended:	ENGL 101 or ENGL 101H or higher.
Transferable to CSU:	Yes
Transferable to UC:	No
Grading Method:	Standard Letter

## Catalog Course Description

A second course in research for students participating in team based, physics-related research or projects. Topics include preparing and presenting a professional-style research proposal and the development of an experimental design to carry out the research. 54 lab hours.

## Course Objectives

- Understand and contribute to the components of a professional-style research proposal which includes: an abstract, introduction, a description of the experimental design (both narrative and diagrammatic), team structure and management, a description of proposed outreach efforts, a budget and a conclusion
- Prepare an informal oral presentation on an assigned part of the research proposal.
- Design, construct and test and experimental prototype.
- Collect and analyze data from the prototype.
- Learn to record and present data in a variety of formats (tables, graphs, lab notebook, etc.).

## Major Course Content

N/A because this is a lab only course.

## Hours Arranged Content

1. Prototype Design and Construction
  - a. Prototype schematic
  - b. Scale and perspective
  - c. Design Software
  - d. Construction/Materials
    - i. Materials
    - ii. Tools
    - iii. Procedure
2. Data Collection and Analysis

- a. Tables and Graphs
  - b. Error Analysis
  - c. Curve Fitting/Modeling
3. Writing a Research Proposal
    - a. Abstract
    - b. Description of Experimental Design
    - c. Budget
    - d. Introduction and conclusion
    - e. Educational outreach activities

## Suggested Reading Other Than Required Textbook

Journal articles and books related to research project.

## Examples of Required Writing Assignments

Write a sample section for a research proposal.

## Examples of Outside Assignments

Research different aspects of prototype design; identify physics principles related to research project.

## Instruction Type(s)

Lab