

# PHY 221 - PROBLEMS & PRINC.OF PHYSICS I

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- Learn that they CAN understand seemingly complex physical concepts.
- Learn that they CAN problem-solve beyond memorized algorithms.

## Course Description

This course is the first semester of a two-semester course sequence primarily intended for those students preparing for engineering, science, or math careers. Topics include kinematics, Newton's Laws, conservation of momentum, conservation of energy, rotational motion, oscillations, and fluids. The development of conceptual understanding and problem-solving skills are emphasized. Computers are used for data acquisition and analysis. The laboratory covers the preceding topics in parallel with the lecture whenever possible. Group 1 lab course.

## Credit Hours

4

## Contact Hours

5

## Lecture Hours

3

## Required Prerequisites

MTH 141

## Corequisites

PHY 221L, PHY 221R

## Recommended Prerequisites or Skills Competencies

ENG 111; MTH 142 may be taken concurrently

## General Education Outcomes supported by this course

Quantitative Reasoning

## Course Learning Outcomes

### Knowledge:

- Define: physical quantities, physical laws, and physical process.

### Application:

- Determine relevant information.
- Determine which scientific and mathematical principles apply.
- Apply appropriate conceptual problem-solving strategies.
- Apply appropriate quantitative problem-solving strategies.

### Integration:

- Extend the learned physical concepts to novel problem-solving scenarios.

### Human Dimension:

- Interact with lab partners to achieve the given objectives.

### Caring - Civic Learning:

- Relate everyday observations of the natural world to physics concepts.
- Learn to care more deeply about the natural world.

### Learning How to Learn: