



Course Outcome Summary

General Education Satisfier Course

PHY 251 Engineering Physics I

Course Information

Division	Science/Mathematics
Contact Hours	105
Lecture Hours	60
Lab Hours	45
Total Credits	5

Prerequisites

MATH 171, Recommended: MATH 172.

Course Description

This course is designed to satisfy the requirements of Engineering and Physics majors. Development of ability to marshal physical principles and mathematical techniques in the solution of problems encountered in classical mechanics -including linear and rotational motion, energy, momentum, gravitation, fluids- relativity and wave motion. Calculus based.

This course is approved as a General Education competency satisfier.

General Education Goal: Goal One: Critical Thinking

Competency: Understand and apply the elements of scientific inquiry and scientific principles in a natural science college laboratory course setting

Learning Outcome: Students will use the scientific method to define a problem, utilize appropriate methods to solve the problem, and propose and evaluate a solution to the problem.

General Education Learning Objectives

- Observe and describe natural phenomena and formulate hypotheses.
- Plan and implement scientific experiments to test hypotheses.
- Utilize scientific laboratory skills for data collection within a college laboratory setting.
- Evaluate experimental data and propose solutions based on this data.
- Evaluate the proposed implications of a solution.

Course Outcomes

In order to evidence success in this course, the students will be able to:

- Utilize units of measurement in the SI system, prefixes, unit conversions and data analysis, including propagation of errors.

Applies to General Education Objective

- Evaluate experimental data and propose solutions based on this data.

- Identify parameters and laws in both linear and rotational motion

Applies to General Education Objective

- Observe and describe natural phenomena and formulate hypotheses.
- Plan and implement scientific experiments to test hypotheses.



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- C. Utilize scientific laboratory skills for data collection within a college laboratory setting.
- D. Evaluate experimental data and propose solutions based on this data.
- E. Evaluate the proposed implications of a solution.

3. Describe Newton's laws and the law of Universal Gravitation

Applies to General Education Objective

- A. Observe and describe natural phenomena and formulate hypotheses.
- B. Plan and implement scientific experiments to test hypotheses.
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4. Distinguish between work and the different types of mechanical energy

Applies to General Education Objective

- A. Observe and describe natural phenomena and formulate hypotheses.
- B. Plan and implement scientific experiments to test hypotheses.
- C. Utilize scientific laboratory skills for data collection within a college laboratory setting.
- D. Evaluate experimental data and propose solutions based on this data.
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5. Analyze momentum and impulse in collisions

Applies to General Education Objective

- A. Observe and describe natural phenomena and formulate hypotheses.
- B. Plan and implement scientific experiments to test hypotheses.
- C. Utilize scientific laboratory skills for data collection within a college laboratory setting.
- D. Evaluate experimental data and propose solutions based on this data.
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6. Identify parameters and properties of waves including sound.

Applies to General Education Objective

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- B. Plan and implement scientific experiments to test hypotheses.
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7. Contrast the concepts of relative speed, momentum and energy in classical physics with those in special relativity

Applies to General Education Objective

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