



## 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 measurement, mechanics, relativity, rotational and wave motion, waves, sound, and fluid mechanics.

**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:

- Describe and define measurements in the SI, US customary, and cgs systems.

Applies to General Education Objective

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

- Identify the four kinematic equations of motion.

Applies to General Education Objective

- Observe and describe natural phenomena and formulate hypotheses.
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3. Solve for each variable in the kinematic equations.

Applies to General Education Objective

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4. Describe the relationship between horizontal and vertical motion.

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5. Compute products and sums of vectors.

Applies to General Education Objective

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

6. State Newton's dynamic equations.

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.
- E. Evaluate the proposed implications of a solution.

7. Solve for each variable in Newton's dynamic equations.

Applies to General Education Objective

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8. Describe work in a scientific way.

Applies to General Education Objective

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9. Calculate the amount work done over a given distance and angle.

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10. Compare rotational and linear motion.

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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.

11. State the conditions for static and kinetic friction.

Applies to General Education Objective

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- D. Evaluate experimental data and propose solutions based on this data.
- E. Evaluate the proposed implications of a solution.

12. Identify terms used in both momentum and impulse.

Applies to General Education Objective

- A. Observe and describe natural phenomena and formulate hypotheses.
- D. Evaluate experimental data and propose solutions based on this data.
- E. Evaluate the proposed implications of a solution.

13. Calculate momentum and impulse.

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.
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- E. Evaluate the proposed implications of a solution.

14. Describe the equation differences used for relative speed, momentum, and energy for relativistic affects.

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15. Define the condition(s) necessary for simple harmonic motion.

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MONROE COUNTY  
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# Course Outcome Summary

**General Education Satisfier Course**

**PHY 251 Engineering Physics I**

16. Identify longitudinal and transverse waves.

Applies to General Education Objective

- A. Observe and describe natural phenomena and formulate hypotheses.
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17. Determine wavelengths, frequencies, and periods in wave motion.

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18. Define the conditions necessary to produce standing waves in strings, open-closed systems, and closed-closed systems.

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19. Identify static and dynamic pressure situations.

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Date Updated: 2/17/2015

By: VM