

CORE CURRICULUM COMPONENT APPLICATION
Texarkana College

Part I: Course Information

Course Type

- Existing/Restructured
 New Course

Course Prefix & Number: **PHYS 1301**

Texas Common Course Number (TCCN): **1301**

Course Title: **College Physics I**

Course Catalog Description

College Physics I (4,3,3). Designed primarily for students such as premedical, pre-pharmacy, geology, and architecture, who do not expect to do additional work in engineering or physics. Elementary vector algebra, mechanics, heat, thermodynamics and sound.

Course Prerequisites:

MATH 1314, MATH 1316, or concurrent enrollment.

Available Online?

- Yes
 No

Part II: THECB Course Objectives

Upon successful completion of this course, students will:

1. Demonstrate techniques to set up and perform experiments, collect data from those experiments, and formulate conclusions from an experiment.
2. Record experimental work completely and accurately in laboratory notebooks, and communicate experimental results clearly in written reports.
3. Determine the components of linear motion (displacement, velocity, and acceleration), and especially motion under conditions of constant acceleration.
4. Apply Newton's laws to physical problems including gravity.
5. Solve problems using principles of energy.
6. Describe the components of a wave and relate those components to mechanical vibrations, sound, and decibel level.
7. Use principles of impulse and linear momentum to solve problems.
8. Solve problems in rotational kinematics and dynamics, including the determination of the location of the center of mass and center of rotation for rigid bodies in motion.
9. Solve problems involving rotational and linear motion.
10. Demonstrate an understanding of equilibrium, including the different types of equilibrium.
11. Discuss simple harmonic motion and its application to quantitative problems or qualitative questions.
12. Solve problems using the principles of heat and thermodynamics.
13. Solve basic fluid mechanics problems.

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Part III: THECB Skill Objectives

- 1. Critical Thinking Skills:** to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- 2. Communication Skills:** to include effective development, interpretation and expression of ideas through written, oral and visual communication
- 3. Empirical and Quantitative Skills:** to include applications of scientific and mathematical concepts.
- 4. Teamwork:** to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

Part IV: Course Student Learning Outcomes (SLO)

1. Demonstrate techniques to set up and perform experiments, collect data from those experiments, and formulate conclusions from an experiment.
2. Record experimental work completely and accurately in laboratory notebooks, and communicate experimental results clearly in written reports.
3. Determine the components of linear motion (displacement, velocity, and acceleration), and especially motion under conditions of constant acceleration.
4. Apply Newton's laws to physical problems including gravity.
5. Solve problems using principles of energy.
6. Describe the components of a wave and relate those components to mechanical vibrations, sound, and decibel level.
7. Use principles of impulse and linear momentum to solve problems.
8. Solve problems in rotational kinematics and dynamics, including the determination of the location of the center of mass and center of rotation for rigid bodies in motion.
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10. Demonstrate an understanding of equilibrium, including the different types of equilibrium.
11. Discuss simple harmonic motion and its application to quantitative problems or qualitative questions.
12. Solve problems using the principles of heat and thermodynamics.
13. Solve basic fluid mechanics problems.

Skill Objective:	Critical Thinking Skills: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
THECB Course Objective	Discuss simple harmonic motion and its application to quantitative problems or qualitative questions.
Course Student Learning Outcome	Discuss simple harmonic motion and its application to quantitative problems or qualitative questions.
General Learning Activities	We will do an experiment on Simple Harmonic Motion (SHM). The experiment will be performed with a pendulum and spring. After a discussion of basic SHM,

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	students will be asked to determine which variables might affect SHM. Then the experiment will be performed to determine which variables actually affect SHM. Student will then need to determine why each variable did or did not affect SHM.
Assessment <i>Must Include Assignment & Rubric</i>	The assignment will be to create and carry out the experiment on simple harmonic motion. The Critical Thinking Skills rubric will be used

Skill Objective:	Communication Skills: to include effective written, oral, and visual communication
THECB Course Objective	Discuss simple harmonic motion and its application to quantitative problems or qualitative questions.
Course Student Learning Outcome	Discuss simple harmonic motion and its application to quantitative problems or qualitative questions.
General Learning Activities	Students in a group will give the explanations of the experiment in written form. They will also be responsible for preparing a PowerPoint presentation and giving it as a group to the whole class.
Assessment <i>Must Include Assignment & Rubric</i>	The assignment will be to communicate in a written report and in a class presentation the results of the experiment on simple harmonic motion. The Communication Skills rubric will be used.

Skill Objective:	Empirical and Quantitative Skills: to include applications of scientific and mathematical concepts.
THECB Course Objective	Discuss simple harmonic motion and its application to quantitative problems or qualitative questions.
Course Student Learning Outcome	Discuss simple harmonic motion and its application to quantitative problems or qualitative questions.
General Learning Activities	Students must understand and be able to apply the principles of SHM. The experiment requires that mathematic representations of SHM be used in the explanation of the principle.
Assessment <i>Must Include Assignment & Rubric</i>	The assignment will be to apply scientific and mathematical principles to the analysis of the data collected in the experiment and come to a conclusion. The Empirical and Quantitative Skills rubric will be used.

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Skill Objective:	Teamwork: to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal
THECB Course Objective	Discuss simple harmonic motion and its application to quantitative problems or qualitative questions.
Course Student Learning Outcome	Discuss simple harmonic motion and its application to quantitative problems or qualitative questions.
General Learning Activities	Students will work together to formulate a hypothesis about SHM, perform the experiment, formulate explanations, and give a presentation to the class on their results.
Assessment <i>Must Include Assignment & Rubric</i>	The assignment will be to collect and carry out the experiment as a group and to meet as a group to analyze the data and make a report and presentation. We will use the Teamwork rubric.