

PHYS 2425 — University Physics I

Frank Phillips College

General Course Information

Credit Hours: 4

General Education Core Curriculum Course

Prerequisite

Completion of MATH 2413 Calculus with a grade of C or better.

Course Description

Fundamental principles of physics, using calculus, for science, computer science, mathematics, and engineering majors; the principles and applications of classical mechanics, including harmonic motion, physical systems and thermodynamics; and emphasis on problem solving. Must be taken with a laboratory section which includes basic laboratory experiments, experimental design, data collection and analysis, and preparation of laboratory reports.

THECB Approval Number40.0101.54.03

Statement of Purpose

Through the Texas Core Curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world, develop principles of personal and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning.

Core Objectives Required for Life and Physical Sciences Courses

Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method.

Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

- **Critical Thinking Skills** – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- **Communication Skills** – to include effective development, interpretation and expression of ideas through written, oral and visual communication
- **Empirical and Quantitative Skills** – to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- **Teamwork** – to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

Required Core Objective	Activity Related to Core Objective
Communication – to include effective development, interpretation, and expression of ideas through written, oral, and visual communication	Students will read a curriculum related article supplied by the instructor and write an article review, including a summary and a critique in which they demonstrate effective development, interpretation, and expression of ideas.
Communication – to include effective development, interpretation, and expression of ideas through written, oral, and visual communication	Students will demonstrate understanding of their article by writing a short summary as a question on a test.
Communication – to include effective development, interpretation, and expression of ideas through written, oral, and visual communication	Using a method that will keep the student’s identity secure, such as Socratic, they will be asked to evaluate the assignment with a few brief questions.
Critical Thinking Skills – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information	Students will read a curriculum related article supplied by the instructor and write an article review, including a summary and a critique. Students will demonstrate critical thinking by showing they understand the main points of the article, and by critiquing the article.
Critical Thinking Skills – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information	Students will demonstrate critical thinking by identifying the places they demonstrated critical thinking in their article. They will do so by answering a question on a test.
Critical Thinking Skills – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information	Using a method that will keep the student’s identity secure, such as Socratic, they will be asked to evaluate the assignment with a few brief questions.
Empirical and Quantitative Skills – To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions	Lab Demonstration: Each student will participate in a lab demonstration that includes the purpose of the lab, apparatus, data, calculations and conclusion.
Empirical and Quantitative Skills – To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions	Lab Demonstration: Students will demonstrate understanding of their lab demonstration by answering a question on a test.
Empirical and Quantitative Skills – To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions	Lab Demonstration: Using a method that will keep the student’s identity secure, such as Socratic, they will be asked to evaluate the assignment with a few brief questions.
Teamwork – To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal	Students will participate in a lab demonstration that includes the purpose of the lab, apparatus, data, calculations and conclusion.
Teamwork – To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal	Students will demonstrate understanding of their lab demonstration by answering a question on a test.
Teamwork – To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal	Using a method that will keep the student’s identity secure, such as Socratic, they will be asked to evaluate the assignment with a few brief questions.

Lecture Learning Outcomes

Upon successful completion of this course, students will:

1. Determine the components of linear motion (displacement, velocity, and acceleration), and especially motion under conditions of constant acceleration.
2. Solve problems involving forces and work.
3. Apply Newton's laws to physical problems.
4. Identify the different types of energy.
5. Solve problems using principles of conservation of energy.
6. Define the principles of impulse, momentum, and collisions.
7. Use principles of impulse and momentum to solve problems.
8. Determine the location of the center of mass and center of rotation for rigid bodies in motion.
9. Discuss rotational kinematics and dynamics and the relationship between linear and rotational motion.
10. Solve problems involving rotational and linear motion.
11. Define equilibrium, including the different types of equilibrium.
12. Discuss simple harmonic motion and its application to real-world problems.
13. Solve problems involving the First and Second Laws of Thermodynamics.

Lab Learning Outcomes

Upon successful completion of this course, students will:

1. Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner.
2. Conduct basic laboratory experiments involving classical mechanics.
3. Relate physical observations and measurements involving classical mechanics to theoretical principles.
4. Evaluate the accuracy of physical measurements and the potential sources of error in the measurements.
5. Design fundamental experiments involving principles of classical mechanics.
6. Identify appropriate sources of information for conducting laboratory experiments involving classical mechanics.

Methods of Evaluation

Students' successful completion of required assignments as well as participation in classroom learning activities will be the basis for assessing progress toward course objectives.

Category	Percentage
Homework assignments	5%
Laboratory Grade	30%
Exams	55%
Semester Exam	10%
Total	100%

The majority of your evaluation comes through traditional methods; however, participation in laboratory exercises and class discussion will also contribute to your grade.

Academic Honesty and Integrity

Students attending Frank Phillips College are expected to maintain high standards of personal and scholarly conduct. Academic dishonesty including, but not limited to, cheating, collusion (working with anyone else to produce work for which you take credit without the professor's permission), utilizing resources such as books and notes for a test without the professor's permission, and plagiarism is considered a serious offense and may result in disciplinary actions including:

- A grade of 0 for the test or assignment
- A semester grade of F for the course
- Administrative withdrawal from the course
- Academic suspension
- Notation of the student's transcript of "Academic Dishonesty."
- ***Faculty members have the right to assign a failing grade to a student who is guilty of academic dishonesty at any point during a semester. Faculty members may prohibit a student from dropping a course when academic dishonesty is discovered. However, if a student has dropped the course in accordance with the rules and dates applied to dropping a course and prior to the discovery of academic dishonesty, the grade of W will stand. Students currently enrolled in a course and students who have completed a course (A, B, C, D, CT, and I) may have a grade changed to an F if academic dishonesty is discovered. The faculty member must notify the student of the change to the final grade within one week of facilitating the change. The student will have the opportunity to appeal the final grade change according to the college policy stated in the catalog.

Class Attendance

Regular attendance is necessary for satisfactory achievement. Therefore, it is the responsibility of the student to attend class in accordance with requirements of the course as established by the instructor.

Students will be excused from class without penalty when either representing the college in an approved activity or having an approved reason for not attending. Reasons for absences must be approved by the instructor of the course. These exceptions do not relieve the student of the responsibility of making up the missed work as designated by the instructor concerned.

Students who enroll in one or more college-preparatory course(s) because of TSI deficiency will be administratively withdrawn from all classes if the course in which they are excessively absent is their only preparatory course. For a student enrolled in more than one preparatory course, the student may be dropped from only the course affected by absences.

Any student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day, provided that proper notification of the absence is given to the instructor of the course missed. The student should notify the instructor within the first fifteen (15) days of the semester that he or she intends to be absent on the specified holy day.

Cell Phones and Other Electronic Devices Procedure:

Cell phones and electronic devices in the classroom create a distraction for both students and faculty. Cell phones are also considered suspicious during test taking. Therefore,

Frank Phillips College outlines the procedure for handling cell phone usage in a classroom as follows:

1. First Offense: the student will be warned verbally by the instructor to turn off the cell phone or electronic device or by appropriate administrative personnel at distance sites. The instructor will make a notation of the infraction.
2. Second Offense: the student will be asked to leave the class period for the day and will receive zeros for any work done in class on that day; a student receiving instruction through remote connection at an off-campus site will be required to attend the class face to face in Borger from this class date forward.
3. Third Offense: the student will be administratively withdrawn from the class in which the infraction occurred and will receive no refund for the class.

Students should leave the college's main number with an appropriate contact in case of an emergency.

Borger: (806) 457-4200, ext. 0 or 886-5047 after hours

Dalhart: (806) 244-7669

Perryton: (806) 648-1450

Grievance Policy

If you have a dispute concerning your grade or policies in this class, it is your responsibility to FIRST contact the instructor, either by e-mail or in person, to discuss the matter. Should things remain unresolved after this initial contact, please follow the procedures described in the Academic Policies section of the Frank Phillips College Catalog. In the vast majority of cases, the matter can be resolved at the instructor/student level, and learning to communicate your concerns in a civilized manner is part of the college experience.

Important Information

Frank Phillips College is a Microsoft Office Campus. You must submit your electronic assignments in Microsoft Office programs only. If you do not have Microsoft Office, you may use one of the computer lab sites on campus for your class work.

Scans/Or Core Competencies That Will Be Addressed in the Class

Resources:

Allocates Time

Allocates Money

Allocates Material & Facility Resources

Interpersonal:

Participates as a Member of a Team

Teaches Others

Serves Clients/Customers

Exercises Leadership

Information:

Acquires & Evaluates Information

Organizes & Maintains Information

Uses Computers to Process Information

Thinking Skills:

Creative Thinking

Decision Making

Problem Solving

Seeing Things in the Mind's Eye

Negotiates to Arrive at a Decision

Works with Cultural Diversity

Technology:

Selects Technology

Applies Technology

Maintains & Troubleshoots Technology

Basic Skills:

Reading

Writing

Arithmetic

Mathematics

Listening & Speaking

Knowing How to Learn

Reasoning

Systems:

Understands Systems

Monitors & Corrects Performance

Improves & Designs Systems

Personal Qualities:

Responsibility

Self-Esteem

Sociability

Self-Management

Integrity/Honesty