

PHYS 1403.004
General Physics I
Fall 2008

Professor: Dr. Jennifer Wilhelm
Associate Professor of Science/Math Education
Office: Education Building (Room 270)
Phone: 742-1997 ext. 229; Home: 795-9134
Email: Jennifer.Wilhelm@ttu.edu

Schedule: M 1:00pm – 3:20pm
R 2:00pm – 4:20pm

Class Location: Science Building Room 118

Office Hours: W 9:00am - Noon, R 9:00am – 11:00am

Course Materials:

- Serway and Vuille (2008). *College Physics*. Eighth Edition, Brooks/Cole, Cengage Learning.
- Course Packet: Available at CopyTech.
- You must purchase a journal for this course.
- All other materials (extra handouts) will be available in class or via WebCT.

Course Description

Algebra and trigonometry based treatment of the laws of motion, energy, momentum, circular motion, gravitation, waves, and sound. Prerequisite: Mathematics 1320 or 1321. Credit 4 hours.

The Nature of the Course: The course will be completely laboratory-based. (It will NOT be divided into Lecture and Laboratory. It is important that you understand this.) You will work through modules, learning content by doing experiments. Throughout the experiments there will be questions to guide you. The focus is on understanding the experiments and on learning to develop models of physical phenomena based on experimental evidence. It is the *process* that you go through in class that is important. You will answer the questions in the your lab notebook. You will have a record of your answers. There will also be times for discussion with other students and points at which the instructor will question you to determine your understanding up to that point. There will also be readings, exercises, homework, quizzes, exams, and a final project.

Outcomes

So that the student will have:

1. Knowledge of basic processes, concepts and principles of the laws of motion, energy, momentum, circular motion, gravitation, waves, and sound;
2. Knowledge and understanding of the concepts and laboratory techniques found in general physics;
3. Knowledge of metric measures;

4. Proficiency in organization and use of laboratory equipment;
5. Proficiency in process skills, including identifying and controlling variables, interpreting data, formulating and testing hypotheses and experimenting.

Course Objectives:

Upon completion of this course, the student will be able to:

1. State the fundamental physical laws of motion, energy, momentum, circular motion, gravitation, waves, and sound;
2. Use algebra in solving problems in the fields mentioned in the objective above;
3. Use the concept of a vector along with basic trigonometry to solve a wide range of problems;
4. Utilize basic problem solving processes, including observation, inference, measurement, prediction, use of numbers, classifying and use of space and time relationships;
5. Use computers to perform laboratory experiments and analyze and graph data;
6. Correctly use measuring devices and other equipment introduced in the lab;
7. Work effectively in group situations.

Methods of Accessing the Expected Learning Outcomes

We will have quizzes, two midterms, journal and homework assignments, pre-tests, post-tests, surveys, a final project, and one final exam which will assess your level of understanding of basic concepts, facts, discussed topics and reading material. Graded journal entries and homework assignments will be used to assess understanding of individual topics covered in our daily discussions, and pre- and post-tests will be used to assess gains in understanding over the extent of the course.

Participation: Participation will count as 15% of your grade. If you come to class and participate each day, not coming late, not leaving early, being on task (working on the appropriate experiment), etc., you will receive the full participation grade. In addition, pre-tests and post-tests will count as part of your participation grade. **If you miss more than three classes, you will NOT receive credit for this course.**

Pre-tests, post-tests and surveys: A general pre-test and a survey will be given at the beginning of the semester and some sections will start with pre-tests. In addition, a general post-test, a survey and a class assessment questionnaire will be given at the end of the semester. There may be other pre-tests, post-tests or surveys. You may be required to do some of these outside of class. Pre-tests are to determine your understanding of a topic before instruction. Pre-tests and the general post-test will not be graded, but they will be counted as part of your participation grade. You will receive full credit, if you take the general pre-test, general post-test or complete the surveys and questionnaires. Your participation grade will decrease by 3 percentage points for each general pre-test,

general post-test, survey or questionnaire you do not complete and ½ percentage point for each section pre-test you do not complete.

Homework: Homework will be assigned each week. Late homework will not be accepted, with the exception that you will be allowed to turn in one homework late. Other late homework will not be accepted. Each homework assignment will include written work recording all of your thinking processes with each problem (for example, how you began to approach the problem; how or if you changed your approach, how this problem is like an activity we did in class; what you are unsure about; how you arrived at your solution; why you think your solution is correct; etc.). Homework will be graded and will count as 15% of your grade. It is an important part of the class.

Journals: All lab topics will be written in your course journals. These journals will be periodically graded throughout the term. Your grade on journal entries will be based on both quantity and quality of the entry. Missing entries will be give zero points and entries deemed as partial or of sub-standard quality will not receive full credit. Your journals are 10% of your grade.

Project: We will study one topic as a project outside of class. More information on the project will be given out in class. There will be times outside of class that you can, and should, talk with classmates about material in the project. The project will count as 15% of your grade.

Quizzes: There will be quizzes on content and process covered in class, homework, readings and exercises up to that point. Quizzes will count 5% of your grade.

Exams: There will be two midterm exams and a final exam on content and process covered in class, homework, readings and exercises up to that point. Each midterm exam will count 10% of your grade and the final will count 20% of your grade.

Midterm exam 1	October 6 th , 2008
Midterm exam 2	November 13 th , 2008
Final Exam	Saturday, December 6 th , 2008, 1:30pm – 4:00pm

Grades: The grades will be distributed as follows:

Participation	15%
Homework	15%
Journals	10%
Project	15%
Quizzes	5%
Midterm 1	10%
Midterm 2	10%
Final Exam	20%

Finally, all quizzes and exams will be open journal. In other words, you may use your journals as a reference source. (Your textbook and lab course packet will not

be permitted for use during quizzes or exams.) It is therefore to your advantage to keep a well organized and well documented journal.

Grade Scale

91 – 100	=	A
81 – 90	=	B
71 – 80	=	C
61 – 70	=	D
Below 61	=	F

Any student who, because of a disabling condition, may require some special arrangements to meet the course requirements should contact the instructor as soon as possible so that necessary accommodations can be made. Proper documentation must be presented from the Student Disability Services (AccessTECH). For the complete description of this policy see Texas Tech Operating Policy 34.22 online.

Any student absent for a religious holiday should make the intention known prior to the absence and shall make up missed exams in accordance with Texas Tech Operating Policy 34.19

Students will foster a spirit of academic integrity, and they will not present work as their own that was not honestly performed by them. For a complete description of this policy see Texas Tech Operating Policy 34.12

Tentative Course Outline:

Week of class	Topics
Aug 25th	Vectors and One-Dimensional Motion Graphing
Sept 1st	One-Dimensional Forces and Motion
Sept 8th	Gravitational Force and Two-Dimensional Motion
Sept 15th	Newton's Third Law, Force Diagrams and Forces
Sept 22nd	Applications of Newton's Laws
Sept 29th	Statics and Torque
Midterm 1	Monday, October 6th
Oct 13th	Circular Motion