

PHYS 1403-003
General Physics I
Fall 2011

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Office Hours: 9:00–10:30 p.m. (M,W), or by appointment.

Prerequisites: MATH 1320 and 1321.

Core Purpose Statement: Students graduating from Texas Tech University should be able to demonstrate problem solving skills and critical thinking skills, such as the development and use of models that are consistent with experimental evidence. This is consistent with the objectives for the Natural Science Core Curriculum Objectives listed below and will be demonstrated by the Learning Outcomes listed below.

Core Curriculum Objective: The objective of the study of the natural sciences component of a core curriculum is to enable the student to understand, construct, and evaluate relationships in the natural sciences, and to enable the student to understand the bases for building and testing theories. The natural sciences investigate the phenomena of the physical world.

Expected Learning Outcomes:

There are objectives at the beginning of each section.

Students should be able to demonstrate problem solving skills and critical thinking skills, such as the development and use of models that are consistent with experiment.

In particular students should

- 1) understand the concepts listed in the objectives and be able to demonstrate their understanding by the ability to solve problems and answer questions related to the concepts. They should be able to explain the concept clearly to another person (so that the other person understands).
- 2) understand how mathematical models are developed based on experimental evidence. They should be able to demonstrate this by demonstrating the ability to take and analyze data and develop a model based on the data, using graphing and other techniques, which can be used to predict the outcome of other experiments. They should understand the limitations models and be able to use them to make predictions.

Methods for Assessing Expected Learning Outcomes:

Learning outcomes will be assessed through quiz, homework and exam problems that require students to explain their reasoning and in-class discussions with their peers.

Course Materials: All materials (laboratory modules, pre-tests, exercises and readings) can be purchased at Barnes and Noble on campus.

Course Coverage: Kinematics, Forces, Torque, Work, Energy, Momentum, Rotational Motion, Waves, and Fluids.

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 on the computer. 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 and homework.

Participation: Participation will count as 20% of your grade. If you come to class and participate each day, not coming late, not leaving early, being “on task” when you are in the laboratory, etc., you will receive the full participation grade. Unexcused absences will result in a loss of one point for each unexcused absence. Absences will be excused for illness (documentation may be required), university sponsored events, court appearances, and what I define as emergencies. In addition, pre-tests, post-tests, journals, surveys, and questionnaires will count as part of your participation grade. Note: texting or checking email on the computers will result in your participation grade being lowered. Cell phones should be turned off and **put out of sight for the duration of the class period**. Students engaging in repeated cell phone use will be asked to leave class and will receive a 0 for their participation grade.

Homework: Homework will be assigned approximately every 7-10 days. The due date will be on the homework. Homework will be turned in at the beginning of the class on the day it is due. After the beginning of class it is late. (If you are late for class, it is late.) Late homework will be accepted at my discretion, meaning it may not be accepted. Homework will be graded and will count as 20% of your grade. It is an important part of the class.

Pre-tests, post-tests and surveys: A general pre-test and a survey will be given at the beginning of the semester and each lab section will start with a pre-test. 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 4 percentage points for each general pre-test, general post-test, survey or questionnaire you don't complete and 1 percentage point for each section pre-test you don't complete.

Journals: Occasionally you may be asked to write a journal entry. Your instructor will give you a topic to write on. You may also use the journal to comment to the instructor about the class. Journal entries will be read, but not graded for content. Journal entries will count as part of your participation grade. You will get full credit, if you write the journal entry, and lose 1 percentage point from your participation grade, if you don't.

Quizzes: There will be quizzes on content and process covered in class, homework, readings and exercises up to that point. Quizzes will count 10% of your grade. The quizzes will be announced.

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. *Tentative* dates for the exams are listed below.

Midterm exam 1	September 21, 2010
Midterm exam 2	October 19, 2010
Midterm Exam 3	November 16, 2010
Final Exam	Wednesday, December 14, 2010, 7:30am – 10:00am

Grades: The grades will be distributed as follows:

Participation	20%
Homework	20%
Quizzes	10%
Midterm 1	10%
Midterm 2	10%
Midterm 3	10%
Final Exam	20%

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office in 335 West Hall or 806-742-2405.