

PHYS 1408-H01: Principles of Physics I
Fall 2009

Professor: Dr. Beth Thacker
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Schedule: 12:30 pm - 1:50 pm TR

Laboratory: 2:00pm – 4:50pm F

Office Hours: M 12:00pm - 1:00pm, T 11:00am – 12:00pm or by appointment.

Prerequisite or Corequisite: MATH 1351.

Course Text: Physics, Marcelo Alonso and Edward J. Finn, Addison-Wesley, 1996); ISBN 0-201-56518-8.

Laboratory Text: Workshop Physics Activity Guide Modules I and II, Priscilla W. Laws, (John Wiley and Sons, Inc., 2004).

Course Coverage: Measurement, Rectilinear Motion, Curvilinear Motion, Forces, Torque, Work, Energy, Momentum, Angular Momentum, Rotational Motion, Oscillatory Motion, Wave Motion, and other topics, as time permits.

The Nature of the Course: The course will be taught interactively. Laboratory work and lecture work will be interwoven, so we may be doing laboratory experiments in lecture and working on problem solving in laboratory. You will be asked to work with other students during class to make predictions or solve problems. You may be called upon during class to present a prediction or a solution. The focus of the course is on problem solving and critical thinking, not memorizing equations to get an answer. The process by which you solve a problem is more important than the final answer. You will be graded on your process on homework, quizzes and exams.

Homework: Homework will be assigned every seven to ten days. Homework should be written out neatly, showing your process, either calculations or explaining your reasoning. You will be graded on the process. Homework assignments will be turned in at the beginning of the class on the day they are due. After the beginning of class, it is late. No late homework will be accepted. You will be allowed to drop one homework assignment. Homework will be graded and will count as 20% of your grade. It is an important part of the class.

Laboratory work: Physics is an experimental science. The laboratory experience is very important. Laboratory experience will be interwoven with lecture. For some of the laboratories there will be lab write-ups. For some of the laboratories, there will be lab

homework. Participation in class will count as part of your laboratory grade. If you come to class and participate, participating when asked, etc., you will receive the full participation part of the laboratory grade. In addition, there may be pre-tests, post-tests, journals, surveys, and questionnaires that will count the participation part of your laboratory grade.

Problem solving: At least one hour each week will be devoted to problem solving. Some of this work will involve you working on problem solving in groups and sometimes presenting problems at the board or discussing your answers with the instructors.

Projects: Sometimes there will be problems or laboratory work that extend beyond a typical homework problem or work done in lab. This work will be counted towards a project grade. It will account for 5% of your grade.

Quizzes: There will be three quizzes spread throughout the semester. They will count as 10% of your grade.

Exams: There will be three midterm exams and a final exam. Each midterm exam will count 10% of your grade and the final will count 20% of your grade.

Midterm exam 1	September 24, 2009
Midterm exam 2	October 22, 2009
Midterm exam 3	November 19, 2009
Final Exam	Saturday, December 12, 2009 1:30pm – 4:00pm

Pre-tests, post-tests and surveys: Pre-tests, post-tests and surveys may be given during class or laboratory. These will not be graded, but they will be counted as part of your participation grade. You will receive full credit, if you do them and lose participation points, if you don't.

Expected Learning Outcomes

There will be objectives at the beginning of each section. Students should

- 1) understand the concepts listed in the objectives. Students should be able to demonstrate their understanding by a) the ability to solve problems related to the concepts and b) the ability to explain the concept to another person (so that they understand).
- 2) understand how mathematical models are developed based on experimental evidence. They should be able to demonstrate this by demonstrating the ability to take data, analyze the data, in particular by graphing techniques (including being able to plot data, fit it to a curve, qualitatively analyze graphs, etc.), but also qualitatively (predict what will happen to one quantity when another quantity increases or decreases), understand the limitations on models and use the model (once developed) to make predictions.

- 3) be able to demonstrate problem solving skills and the ability to generate cognitive structures that are consistent and consistent with experiment (critical thinking skills).

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.

Grades: The grades will be distributed as follows:

Homework	20%
Projects	5%
Laboratory	15%
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 course requirements should contact the instructor as soon as possible to make any necessary accommodations. Student should present appropriate verification from AccessTECH. No requirement exists that accommodations be made prior to completion of this approved university procedure.