

University Physics I – Fall 2007

PHYS-110/110G

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Classroom: McKinley 108
Lab room: McKinley 14

Lecture meeting times: Sections 002,003: Tuesday and Friday, 9:55AM-11:10 AM
Sections 004,005,006: Tuesday and Friday, 11:25AM-12:35PM

Office hours: M 2-5 PM, T 1-2PM, TH 4-6PM, or by appointment

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Course Goals: University Physics I (Phys 110/110G) is the first part of a two -semester introduction to many topics in classical physics. The most important goal of this class then will be to survey some of the topics of classical mechanics. We will learn about the kinematics and dynamics of simple objects, conservation principles, properties of matter and thermodynamics. The course will focus strongly on both the conceptual foundations of physics, and the mathematical language that can be used to model and describe relationships in the physical world. Another goal of the class is to encourage critical scientific thinking. To that end, the course will provide many experiences where understanding and progress can only be made by combining theoretical insights with real-world experiments or practical knowledge. Physics relationship to other sciences and its social and historical context will be integrated into the course as a natural part of the subject matter. A final goal of the course is to provide practice in problem-solving, a vital skill for science and life.

Student Expectations: This class will not be conducted in the traditional manner of science courses. There will be very little lecturing to introduce new material. Instead, it will be assumed and expected that students come to class prepared, for example, having completed the reading assignment and possibly a warm-up exercise. Most of class time will be spent trying to apply and synthesize the recently acquired knowledge. Some lecturing will occur, but this will be used to analyze, synthesis, or push beyond material already encountered in the book. As a result, attendance will be crucially important to success.

To further develop skills, there will be weekly homework assignments. These are meant to give the student practice problem-solving. While problem-solving skills will be taught in class and are discussed in the textbook, the only way to become a good problem-solver is practice. Students are strongly encouraged to work collaboratively on these assignments, however do not rely on peers to solve everything or you will not develop the skills needed to do well on tests and in future solo endeavors.

Additionally, there will be a laboratory for you to practice skills and concepts of the course while developing experimental intuition. **See the lab instructor's syllabus for details.**

The course presupposes a mathematical background through pre-calculus and concurrent enrolment in or completion of a first semester introductory calculus class, such as MATH-221.

General Education Information: University Physics I is one of eight foundation courses in Curricular Area 5 (The Natural Sciences) in the University's General Education Program. This course is the first of a two-course sequence. Students who take UP I frequently take UP II to fulfill both the General Education requirements as well as a major requirement. The second level courses which may be taken following UP I to complete the Area 5 sequence (if you have the necessary prerequisites) are:

BIO-240G Oceanography, CHEM -205G The Human Genome, CHEM-210G General Chemistry II, CHEM-220G Environmental Resources and Energy, CHEM-230G Earth Sciences, PHYS-200G Physics for a New Millennium, PHYS-205G College Physics II, PHYS-210G University Physics II, PHYS-220G Astronomy

Course Materials:

(1) **Text:** *Physics for Scientists and Engineers*, Randall D. Knight, Pearson-Addison Wesley

(2) **Student Workbook:** *Physics for Scientists and Engineers*, Randall D. Knight, Pearson-Addison Wesley

(3) **Mastering Physics Student Access Code**

(4) **Laboratory manual:** On sale at campus bookstore. You will need it for the first lab.

At the bookstore, a new textbook comes bundled with the Student Workbook and Mastering Physics Student Access Code. The Mastering Physics Student Access Code can be purchased independently directly from the publisher's website: www.masteringphysics.com.

Calculator: Scientific calculator that can do trigonometric, exponential, and logarithmic functions; graphing capacity not required; graphing capabilities cannot be used during in-class tests.

Communication: This course will use the Blackboard system of American University for distribution of information outside of class time.

Email: You must have an American University email account to use this system; if you use an email provider other than American, forward your American mail to that account. Online assignments will be taken through Blackboard or the MasteringPhysics website. Solutions to homework and tests will be posted on Blackboard. Check your email and the class website of Blackboard frequently to stay up-to-date. Email is my preferred method of communication outside of class and office hours. I do not recommend leaving voice mail messages if you want or need a timely response.

Etiquette: Express yourself freely in this class, in email and on Blackboard. However, be respectful and polite to your fellow students.

Course requirements and grading: Your final grade will be based on the following:

Warm-ups	10%
Class Participation and Surveys.....	5%
Lab grade.....	20%
Homework	30%
Test 1	10%
Test 2	10%
Final	15%

Grading scale: Your grades and the class average grades will be released periodically throughout the semester. Students at risk for receiving a C- or lower will be notified midway through the semester. The grading scale below is guaranteed to be the maximum requirements for a grade, but may be adjusted lower to account for class performance.

A > 93%, A- > 90%, B+ > 87%, B > 83%, B- > 80%,
C+ > 75%, C > 65%, C- > 60%, D > 45%

Warm-ups: Roughly once a week, on-line warm-ups exercises will be due online. These cover concepts in the reading assignment due for the next class, i.e. they cover material that will be discussed in class AFTER the quiz is due. As a result, the warm-up exercises will be graded for effort and thoroughness. (You can get a perfect score even if you don't know what you are doing as long as you show real effort!) Your responses to the warm-up quiz will help shape what happens in the class. You may use your book and notes to help you answer the questions but you must work alone. Any communication about the exercise with other students about the content of or the answers to the exercise is a violation of the Academic Integrity Code (AIC) (see below). There are no acceptable excuses for missing an exercise, but your three lowest warm-up exercise grades will be dropped from your grade.

Class Participation and Surveys: Your class participation and survey grade will depend upon you participating in class by answering zapper questions, doing in-class worksheets, and completing class surveys. Each regular class, you will receive one check for being on time and one check for attempting all zapper questions. You will also receive checks for taking class surveys and other periodic activities. To receive the full 5% for class participation you must accumulate 50 checks by the end of the semester.

Laboratories: Ten times during the semester you will meet during the laboratory time in McKinley 14 to perform experiments. Your exact lab meeting time is determined by your course section. You are expected to have read the section in the laboratory manual about that week's experiment before you arrive. Each week that the lab meets you will complete a laboratory report for that experiment to be turned in the following week to the lab instructor. If you miss a lab for an unexcused reason (see below), it is at the discretion of the laboratory instructor to allow you to make it up on a later date. Occasionally the material covered in the experiment for the week will lead the lecture; this is normal.

Homework: On a roughly once a week basis during the semester assigned homework will be required to be turned in, either through the Mastering Physics website, through blackboard, or in class. The homework assignments will be posted on Blackboard. You may work with others to complete these assignments, but you must turn in your own work. I will explain the format for the homework that is required. This is a super-important part of your grade! You may not copy the homework from someone else, as that is a violation of the AIC. You are encouraged to attempt all the homework on your own before seeking assistance, as that will provide the greatest practice for the tests.

Tests and Final: There will be two tests and a final during the final exam period. They will be closed-notes and closed-book and will consist of multiple-choice questions, short written answers and free-response problems. Test II and the final are both cumulative.

Regrades: If you feel home work or a test has been misgraded, DO NOT WRITE on it. Write a note on a separate piece of paper and give it to me in class or office hours or slip it in my mailbox in McKinley 102 within one week of the date it was returned.

Succeeding in this class and getting help: To succeed in this class, it is imperative that you interact with the material every day. Physics is like a foreign language, you cannot learn it just from attending class. Make sure you do the readings before class and lab, do all the warm-up exercises, homework, and other assignments, come to office hours, and go to supplemental instruction sessions.

This is a four-hour class, so you should spend *at least eight hours a week outside of class time* thinking about and practicing physics.

Office hours: You are very welcome to come to office hours. If you can't make any of the times listed above, call or email me, and we can work something out.

Students with disabilities: You should be registered with the University, who will send me a letter describing your special needs. We can accommodate your needs, but occasionally patience will be required.

Academic Integrity Code: Read it and follow it. It is your responsibility to know it and abide by it. Follow all instruction given here or given on a specific assignment or the full due process of the AIC will come down on you.

Excused absences and extensions: Severe illness, religious observance, University business, and family emergency are acceptable reasons for missing class or needing an extension on an assignment. I have the right to request reasonable documentation, in accordance with University policy. Do not notify me of an absence, such as missing an exam or needing an extension, at the last minute. Use email and notify as far in advance as possible. I will be strict about this.