

SYLLABUS FOR PHY-111: General Physics I

Spring 2009

INSTRUCTOR: Dr. Gary B. Adams

OFFICE: PSF-423 PHONE: 727-6511 (Physics Desk: 965-3561)

E-MAIL: gary.adams@asu.edu

WEB PAGE: <http://www.public.asu.edu/~gbadams>

CLASSES:

OFFICE HOURS: (Tentative)

PHY 101 8:35- 9:25 MWF PSF-101

3:05- 3:55 MWF PSF-462

PHY 101 9:40-10:30 MWF PSF-101

2:50- 3:40 TTH PSF-462

PHY 111 10:30-11:45 TTH PSF-101

2:00- 2:50 M PSH-352 Help-Study

NOTE: All Office Hours are open to all of my students.

I. INTRODUCTION

PHY-111 is the first part of a two-semester sequence in introductory physics offered to students who are not majoring in physics or engineering. This sequence is intended for students in pre-medicine, pre-architecture, pre-dentistry, pre-law, construction, kinesiology, psychology, life sciences, manufacturing technology, aerospace technology, physical therapy, pre-optometry, pre-veterinary medicine, etc. WE WILL ASSUME YOU HAVE A GOOD WORKING KNOWLEDGE OF ALGEBRA, GEOMETRY, AND TRIGONOMETRY.

PHY-111 covers the subject of Newtonian mechanics including kinematics (the description of motion), and dynamics (the relation of motion to force and mass). Among the most important topics are Newton's Laws of Motion and the conservation of momentum and energy. Other topics include: Rotation, Simple Harmonic Motion, Waves and Sound, Fluids, and Elasticity in Solids. The textbook is *Physics* (1st Edition), with WebAssign, by Alan Giambattista, and Betty and Robert Richardson (McGraw Hill, 2008). You may purchase either Volume 1 or the extended edition, which contains both Volumes 1 and 2. WebAssign is required. If you buy a textbook without WebAssign, then you must buy WebAssign separately (it is available with a credit card at the WebAssign web site). Also required is a CPS (Classroom Performance System) transmitter, which is available at the bookstore.

The associated laboratory, PHY-113, is an essential part of the introductory physics experience. We STRONGLY recommend that you take the lab concurrently with the lecture section, even if your curriculum is one of the few that does not require it.

## II. COURSE FORMAT AND POLICIES

### A. General

The course during this semester begins on TUE Jan. 20 and concludes on TUE May 5. A schedule of lectures and examinations is distributed with this syllabus.

Lectures are on TTH from 10:30-11:45 in PSF-101. Students are responsible for any information imparted to the class during lectures. Minimal preparation for lecture is to do the reading assignment for that day; the required reading assignments from Giambattista are available on the course website. To more fully prepare for lecture, you should take an advance look at the homework problems which will be assigned for that lecture; homework assignments are available only on your WebAssign web page. A small number of Multiple Choice questions will be asked during each lecture. These may cover the required reading, or may check your comprehension of some topic that I have just covered in lecture. You are expected to record your response to these questions using your CPS (Classroom Performance System) transmitter. You must register your CPS transmitter in order for your responses to be graded. A guide to CPS, including instructions for registering your transmitter, can be found at the course web site. **YOU MUST USE ONLY THE TRANSMITTER THAT YOU REGISTER AND NO OTHER.** Use of another student's transmitter is a case of academic dishonesty, just exactly like cheating on a test. Any and all students involved in any such incidents will automatically receive an E for the course, and may be referred to the Dean for further sanctions.

**Recitation** sections occur weekly as scheduled, beginning TUE Jan. 20. The last recitation meeting will be on WED Apr. 29. The purpose of recitation is to give the student an opportunity in a small class environment to learn essential concepts and problem-solving strategies. On the weeks of 1/27, 2/17, 3/17, 3/24, 4/14, and 4/21, each recitation period will open with a short quiz. On the week of 2/3, TEST 1, on the Mathematics of Motion, will be given during your recitation period.

**Help-Study** sessions are for the students' benefit, but participation is optional. Beginning MON Jan. 26, PSH-352 will be staffed by volunteer faculty and/or Teaching Assistants each weekday between 8:40 and 4:30 (staffing ends at 3:30 on THUR). Teaching Assistants associated with this course, and your instructor, will keep some of their office hours in Help-Study (*i.e.* PSH-352).

An e-mail account is available for every student enrolled at ASU.

Instructions for obtaining an e-mail account can be obtained at the ASU Computer Commons. The student will be responsible for receiving any class information disseminated through e-mail. If you currently have an ASU e-mail account, then you need do nothing. If you have not recently used your ASU email account, then you should double-check to make sure that your email is properly being redirected to your favorite email address.

#### B. CPS (Classroom Performance System)

You will use your CPS transmitter to answer Multiple Choice questions during the lecture period. Your answers will be graded, and your CPS grade will count 10% of your overall class grade. For the first week, CPS questions will be considered practice questions, as you learn to use your CPS transmitters. Beginning TUE Jan. 27, CPS questions will be graded. You are always encouraged to discuss CPS questions with your neighbors in lecture, but when answering, always think for yourself. A correct answer will be counted as 1 point, an incorrect answer will be counted as 0.7 points, and no answer will be counted as zero points; so the penalty for an incorrect answer is very small. There are expected to be about 100 CPS questions over the course of the semester, so the maximum possible CPS score will be about 100 points. The final CPS grade will be determined as a percentage out of 90 points (or ~90% of all possible points should the number of possible CPS points change.) Your maximum CPS grade is 100%, i.e. more than 90 points will not be counted as extra credit. Since only 90% of all possible CPS points are required for a perfect CPS score, no opportunity is provided to make up missed CPS questions. USING SOMEONE ELSE'S TRANSMITTER, OR ALLOWING SOMEONE TO USE YOUR TRANSMITTER, WILL RESULT IN AN AUTOMATIC FAILING GRADE FOR THE COURSE.

#### C. Homework

All homework (HW) problems will be found on your PHY 111 WebAssign website. A guide to using WebAssign (including registration information) can be found on the course web site. Assignments are arranged by topic; there is one assignment per lecture. HW due dates are available only at your WebAssign webpage. In general, assignments associated with TUE lectures are due on MON of the following week and assignments associated with THUR lectures are due on WED of the following week, but the official due dates are always the ones found at your WebAssign site. Assignments submitted after the due date has passed

will receive no credit. Assignments submitted more than 48 hours before the due date will receive 10% extra credit.

While working on the homework problems, STUDY GROUPS ARE STRONGLY ENCOURAGED. For most students, talking about physics is an essential part of understanding physics and developing an accurate and useful physical intuition. Remember, HW problems are practice for the tests; using the proper analytical process for doing the problems is much more important than actually getting the problems done (the point values of HW problems are actually quite small). If you do the problems by simply plugging into an equation from a textbook example, then the HW will be of little or no value to you, and you will struggle on the tests.

A total of approximately 2300 homework points will be possible. The final homework grade will be determined as a percentage out of 2000 points (or  $\sim 85\%$  of all possible points should the number of total HW points change.) Your maximum homework grade is 100%, i.e. more than 2000 points will not be counted as extra credit.

760 HOMEWORK POINTS ARE REQUIRED FOR A PASSING GRADE IN THE COURSE.

#### D. Quizzes

Over the course of the semester, each student will have 14 recitation meetings; six of these recitations will begin with a quiz. Quizzes will be given during the weeks of the following Tuesdays: 1/27, 2/17, 3/17, 3/24, 4/14, and 4/21. Your lowest quiz score will be dropped. Since one quiz score will be dropped, THERE ARE NO MAKE-UP QUIZZES FOR ANY REASON. Exception: once (AND ONLY ONCE) during the semester, you may arrange with your TA to attend an alternate 111 recitation; a list of 111 recitations for our class can be found on our class web site. Quizzes will be similar to WebAssign HW problems assigned on TUE or THUR of the previous week.

#### E. Examinations

Test 1, on the Mathematics of Motion, will be given during your recitation meeting on either 2/03 or 2/04. It will consist of two free-response problems, and will count 10% of your overall grade. The remaining three tests will cover material indicated in the schedule by lecture numbers. Each of tests 2-4 will consist of 2-3 free-response problems and 10-15 multiple choice or short answer questions. The problems may be similar to homework, but they may also

represent applications of principles in entirely different circumstances. The multiple choice questions may cover concepts as well as simpler problems. The final examination will consist of 40 multiple choice questions. The final will be comprehensive. For the test dates, see the lecture schedule which accompanies this syllabus. This instructor's tests from a previous semester, with solutions, will be available at the Canon Production Center in Noble Library beginning WED Jan. 28.

Examinations are governed by the following policies:

- \* THERE WILL BE NO MAKE-UP TESTS FOR ANY REASON. If you miss test 1 for any reason, then the lowest score of tests 2-4 is automatically weighted at 10% of your overall grade to replace test 1. If you miss any one of tests 2-4 for any reason, that test becomes your drop. If you take all four tests, then the lowest score of tests 2-4 will be deleted in the final course grade calculation.
- \* Academic dishonesty on an examination will result automatically in a failing grade for the course and referral to the Dean for further sanctions. Cheating in any form will not be tolerated!
- \* The use of hand calculators is permitted. However, YOUR CALCULATOR MAY NOT CONTAIN STORED PHYSICS EQUATIONS.
- \* Test paper (including scratch paper) will be provided. Bring only your pencils and calculators (and your ASU Sun Card).
- \* A short equation sheet will be provided for each test. It will NOT include any definitions, or fundamental physical principles (like Newton's Second Law). You will find a version of the equation sheet on the class web page.
- \* No partial credit is given for multiple choice. For the problems, partial credit is given. Arithmetical errors will be treated charitably, but for answers that do not make physical sense (wrong dimensions, deviation by several orders of magnitude, etc.) no credit will be awarded. In general, you must get the PHYSICS right to receive any partial credit. Wrong physics = no credit. Failure to give units is always at least 1 point off for each occurrence.
- \* In the event of a fire alarm occurring during an examination, students will be asked to close their examination booklets, gather their belongings and leave the room as expeditiously as possible, leaving their examination booklets on the tables where they were working. The booklets will be gathered and graded as they are. Unless the alarm proves to represent a

bona fide emergency, there will be no make-up examination.

- \* If a student believes there to have been an error in grading his or her test, the complaint should be PUT IN WRITING, stapled to the relevant page of the test, and handed to the course instructor. The problem will be regraded by the individual who graded it originally. If the student is not satisfied with the grader's response to the complaint, he or she may appeal to the course instructor. In this event, the instructor reserves the prerogative to regrade the entire examination. Simple errors, such as point addition, can be corrected by contacting the student's recitation section instructor.

#### F. Final Grades.

The final course grades will be determined with the following weights:

- CPS (total points out of 90): 10%
- Homework (total points out of 2000): 10%
- Quizzes (best 5 of 6): 10%
- Test 1: 10%
- Tests 2-4 (best 2 of 3): 40%
- Final Examination: 20%

LESS THAN 760 HOMEWORK POINTS IS AN AUTOMATIC E.

The scale for final letter grades will ultimately be determined by overall class performance. However, any student who earns 90% of all possible points can expect to receive an A. For information on how to figure your final grade see the course web page.

#### G. Withdrawal

Withdrawal policies are established by the University (see the Spring 2009 General Catalog). The deadline for course withdrawal is Apr. 3. Other deadlines are also given in the Catalog.

*Beginning Jan. 20, this information, plus course information updates, will be available on the internet at*

<http://www.public.asu.edu/~gbadams>