

SYLLABUS FOR PHY 121: University Physics I

Spring 2016

INSTRUCTOR: Dr. Gary B. Adams

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CLASSES:

OFFICE HOURS:

PHY 101 9:00-10:15 TTH PSF-101

To Be Determined - Start MON 1/12

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

6 hours total - On MTWTH

PHY 121 3:00- 4:15 MW PSH-356

See Webpage for Latest Info

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

I. INTRODUCTION

PHY-121 is the first part of a three-semester sequence in introductory physics offered to engineering and other science and pre-professional majors. The prerequisite for PHY-121 is MAT-270. A working familiarity with basic differential and integral calculus will be assumed.

PHY-121 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 are rotational kinematics and dynamics, Newtonian gravitation, and simple harmonic motion. A detailed list of topics can be found on the accompanying class meeting schedule.

The textbook is University Physics, by Young and Freedman, 14th Edition, (Addison-Wesley, 2015.) See our class webpage for a list of purchase options. Reading assignments are keyed to this textbook. At the bookstore, the textbook should come packaged with Mastering Physics. Mastering Physics is required. If you buy a used textbook, then you must buy Mastering Physics separately at the bookstore or online through our class Blackboard page; this is the only online place to pay for a Mastering Physics account for our class. Also required is a licensed Turning Point account.

II. COURSE FORMAT AND POLICIES

A. General

The course during this semester commences on MON Jan. 11 and concludes on THU Apr. 28. A reading schedule and a schedule of class meetings and examinations is distributed with this syllabus. Your Reading Quizzes and

Homeworks can only be found at your Mastering Physics account.

Class meetings are either on MW from 3:00-4:15. There is no lecturing at these class meetings. Instead, class time is spent on collaborative activities in small, assigned groups. You will, at times, be required to report your group's findings to the entire class. Minimal preparation for each class meeting is to do the reading assignment for that day, and to answer the Reading Quiz questions (at Mastering Physics) for that reading assignment. To more fully prepare for each class meeting, also take an advance look at the homework problems which will be assigned for that day (at Mastering Physics). A small number of Multiple Choice questions will be asked during each class meeting. These may cover the reading assignment, or may check your comprehension of some topic that has been covered in the small-group activities. You are expected to record your response to these questions using your Turning Point transmitter or software. You must register your Turning Point transmitter or software in order for your responses to be saved and graded. A guide to Turning Point, including instructions for registration, 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 will meet weekly on THU from 1:30 to 2:20 PM in PSH-356. Most recitations will consist of small-group exercises which will be completed in teams of two or three students; the teams will be assigned by your instructor. These exercises will usually provide an introduction to the concepts and problem-solving strategies which will then be explored in detail in the following week's readings, classroom exercises, and homeworks; however, in some cases, the concepts will have already been introduced in the reading and the exercises will provide additional practice. While the exercises will be a group activity, each student must write up his or her own solutions, which will be collected at the end of recitation by your TA; these graded exercises will count as 4% of your overall grade for the course. There will be 10 graded exercises over the course of the semester, and your lowest score of the 10 will be dropped; there are no make-up exercises for any reason. Quiz 1 will be given at the beginning of the fourth recitation meeting, on THU Feb 4. All four tests will be given during recitation meetings.

Help-Study Sessions are for the students' benefit, but participation is optional. Beginning TUE Jan. 19, the Physics Success Center (PSF-186) will be staffed by volunteer faculty and Teaching Assistants several hours each day between 9:00 and 6:00. Teaching Assistants associated with this course, and your instructors, will keep some of their office hours in the Success Center.

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. Important class information will be disseminated regularly through e-mail. The student will be responsible for receiving it. If you currently have a working ASU email account, then you need do nothing. If you have not recently used your ASU email account, then double-check to make sure that your email is properly being redirected to your favorite email address.

B. Turning Point and Classwork

You will use your Turning Point transmitter or software to answer Multiple Choice questions during the class meetings. For the first two class meetings, Turning Point questions will be considered practice questions, as you learn to use your Turning Point transmitters. Beginning WED Jan. 20, Turning Point questions will be graded. You are always encouraged to discuss Turning Point questions with your group, and with others at your table, but when answering, always think for yourself. A correct answer will be counted as 3 points, an incorrect answer will be counted as 2 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 95 Turning Point questions over the course of the semester, so about 285 TP points will be possible. However, about 255 TP points (or about 90% of all possible TP points should there be more or less than 95 questions) are all that are required to receive an overall TP grade of 100%. Your TP percentage will count a significant fraction (67% - 83%) of your overall Classwork grade for our class. Since only 90% of all possible TP points are required for a perfect Turning Point score, no opportunity is provided to make up missed Turning Point questions. USING SOMEONE ELSE'S TRANSMITTER, OR ALLOWING SOMEONE TO USE YOUR TRANSMITTER, WILL RESULT IN AN AUTOMATIC FAILING GRADE FOR THE COURSE. It is your responsibility to make sure that your Turning Point transmitter is in working order, and that your response is recorded. See our Turning Point information page for more details.

Classwork will consist of small-group exercises which are usually related

directly to the assigned homeworks. Your group will complete each exercise on a portable whiteboard at your table location. Several times during the semester, someone from your group will be selected to report your group's results to the entire class; all members of the group who are present on that day will receive a satisfactory or unsatisfactory grade based on the quality of that report. The small groups will be rearranged four times during the course of the semester. Your Classwork grade will include your TP grade plus your Group Work grade as assigned by your Learning Assistants, and will count 6% of your overall class grade.

C. Reading Quizzes and Homework

There is one Reading Quiz (RQ) for each of the 25 topics listed in our Topic and Reading Schedule; all Reading Quizzes can be found only at Mastering Physics (MP). Each RQ is due at 3:00 PM on the day before the topic for that RQ is covered in our classroom. The final question on every RQ is an opportunity for you to ask for an in-class discussion of topics which you may have found confusing in the reading, or in the previous class. The Reading Quizzes will count 3% of your overall class grade.

There is one assigned Homework (HW) for each of the 25 topics listed in our Topic and Reading Schedule; all Homeworks can be found only at MP. Due dates for each HW are available on the MP Assignment list. In general, assignments for topics discussed in class on MON are due by 11:59 PM the following MON and assignments for topics discussed on WED are due by 11:59 PM the following WED, but the official due dates are always the ones found at MP. Please see the "Tips" for using MP on our class webpage for more information.

A total of approximately 1875 homework points will be possible. The final homework grade will be determined as a percentage of 1685 points (or ~90% of all possible points should the number of total HW points change.) Your maximum homework grade is 100%, i.e. more than 1685 points will not be counted as extra credit. Your HW percentage will count 10% of your overall class grade.

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

D. Quizzes and Graded Group Exercises

Ten of the 15 recitation meetings will consist of a graded group exercise which will be distributed at the beginning of recitation and completed within your assigned small group. Exercises will be the same for all groups in a

given recitation. Exercises will be solved as a group, but each student will write up his or her own solution; solutions will be graded individually and returned the following week. Your lowest graded group exercise score will be dropped. THERE ARE NO MAKE-UP GROUP EXERCISES FOR ANY REASON, with the following possible EXCEPTION: once (AND ONLY ONCE), you may arrange with your TA to attend the 121 recitation which meets FRI at 3:00 PM in PSH-356; to use this possible exception, contact your recitation instructor.

As posted in the schedule, the four quizzes will occur on THU Feb 4 (at recitation), WED Mar 2 (in class before the review session for Test 2), WED Apr 6 (in class before the review session for Test 3), and WED Apr 27 (in class before the review session for Test 4). Each quiz will consist of a multi-part HW-style problem for which you will be required to show your work in detail. Quizzes may cover any topics introduced or explored during recitations or classes which have met before the quiz is given. TA's will grade the quizzes out of 25 points; partial credit will be given. The lowest of your four quiz scores will automatically be dropped when averaged; therefore, there are no make-up quizzes for any reason. Your quiz average will count as 15% of your overall class grade.

E. Examinations

The four tests will cover material as indicated in the class schedule. Each of the four tests will consist of about 12 multiple choice questions, and will be given at recitation on the scheduled test days with assigned seating and a 50-minute time limit. The final exam will consist of 40 MC questions; it will be comprehensive, and it will be given in PSH-356 with assigned seating.

Examinations are governed by the following policies:

- * THERE WILL BE NO MAKE-UP TESTS for any reason. If you miss one of the four tests FOR ANY REASON, that test automatically becomes your dropped test. If you take all four tests, then the lowest of your four test scores will automatically be dropped.
- * 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! You will be required to sign a statement of academic integrity for each test.
- * A full set of test rules is available at the course web site.
- * 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.
- * Your equation sheet will include any necessary constants and a few equations; before the test, a copy of the equation sheet will be available on the class website.
- * In the event of a fire alarm occurring during an examination, students will be asked to gather their belongings and leave the testing room as expeditiously as possible, leaving their examination packets on the tables where they were working. The packets will be gathered and graded as they are. Unless the alarm proves to represent a bona fide emergency, there will likely be no make-up examination.

F. Final Grades.

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

Turning Point and other Classwork 6%
Reading Quizzes: 3%
Homework (total points out of 1685): 10%
Recitation Exercises (drop 1): 4%
Quizzes (drop 1): 15%
MC Tests (drop 1): 45%
Final Examination: 17%

A MINIMUM OF 850 HOMEWORK POINTS IS REQUIRED FOR A PASSING GRADE IN THE COURSE.

The scale for final letter grades will ultimately be determined by the overall class performance. However, any student who earns 80% of all possible points can expect to receive an A of some type (A-, A, or A+); students who earn 65-80% of all possible points can expect to receive some type of B, and students who earn 50-65% of all possible points can expect to receive a C or C+. 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 2016 General Catalog). The deadline for course withdrawal is Apr. 3. Other deadlines are also given in the Catalog.