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PY211 – GENERAL PHYSICS I



PHYSICS 211 is a calculus-based course which covers the principles of classical Newtonian mechanics. Topics include: the laws of motion; the conservation laws of energy, momentum and angular momentum; the principles of work and energy; the properties of rotational and oscillatory motion; and the principles of thermal physics. The course emphasizes the conceptual understanding of the principles of physics and the development of the calculational skills needed to apply these principles to the physical universe.

PY211 Course Organization Fall 2008

Lectures

Section A1 T, R 11:00 AM - 12:20 PM SCI 107
Section B1 T, R 5:00 - 6:20 PM SCI 113

All exams, homework assignments, and labs are the same for both sections. The two sections are graded as a single class, with grade divisions determined jointly by the two professors according to the criteria given below. The course lectures have been divided so that Professor Rohlf will cover (mostly) the first half of the course for both sections and Professor Miller will deliver the lectures (mostly) for both sections for the second half of the course. You may seek out either professor for advising regarding PY211 this semester. The syllabus indicates the lecturer for all scheduled class days.

Course Prerequisites

Completion of one semester of college calculus equivalent to the BU course MA123 is a prerequisite for the course. Please inform the instructor if this prerequisite has not been met

so that you may be rescheduled into an appropriate course. In addition, you should now be taking the co-requisite calculus course MA124 or MA127.

Textbook

Physics for Scientists and Engineers, 7th Edition, Volume I, Chapters 1 - 22
Raymond A. Serway / John W. Jewett, Jr.
Brooks/Cole – Thomson Learning Publisher

The textbook is available at the Boston University bookstore and from various online sources. The bookstore version is bundled with a *Student Solutions Manual and Study Guide* and with a code that will give you access to the WebAssign homework. If you purchase the book elsewhere, it will be necessary for you to purchase separately the **WebAssign** access which may cost about \$25. The *Study Guide* is optional but is a useful resource. Note that only Volume I of the textbook is required for this semester.

Course Syllabus

The course will cover selected sections from Chapters 1 through 22 of the textbook with few exceptions. The detailed schedules of lectures, labs, exams and homework assignments are given on the course syllabus. Due dates of assignments given in the syllabus are firm.

Calculator

A scientific calculator which has trigonometric and exponential functions and their inverses will be needed for homework and exam calculations.

Lectures

Attendance at all lectures is expected. Preparation should include the advance reading of the chapter to be covered in a particular lecture. Reading assignments are given on the syllabus for each scheduled lecture. Although the lectures are mostly delivered as PowerPoint projections, for good performance in the course, it will be necessary for you to take notes during the lectures. Several times during the semester, either announced or unannounced ahead of time, short **quizzes** may be given on material covered in recent lectures. A portion of your final grade will be based on quiz scores.

Course Bulletin Board

The PY211 bulletin board is located in the main corridor of SCI next to SCI 107.

Course Web Site, <http://physics.bu.edu/py211>

This web site will contain all the course information, such as teaching fellow and office hour information, homework solutions, etc., as well as a variety of useful physics resources.

Homework

There will be a homework assignment given nearly every week of the semester that is not interrupted by a break. We will be using online homework system called WebAssign this semester. Please note that the work you submit online must be your own since homework makes up a large portion of your grade and this is the best preparation you have for the course exams. You may obtain help from PY211 teaching fellows in the undergraduate resource room (SCI-121) during their posted hours. **The due dates of all problem sets are**

given on the syllabus. Assignments are due Mondays, 5:00 PM (except for the last assignment which is due on Wednesday at 5:00 PM).

Special Email Account

For questions about homework or for issues related to WebAssign submissions or other difficulties, please send email to py211@buphy.bu.edu. Here the PY211 Teaching Fellows will attempt to answer your questions in a timely manner. For quicker response, use the subject line in your email to indicate the general nature of its content.

Using WebAssign

There is an excellent guide to using WebAssign on the WebAssign web site - please read through this before submitting the first assignment. The URL for WebAssign is: <http://webassign.net/student.html>. You will need a WebAssign access code, which comes bundled with the textbook (cardboard package about the size of a CD) if you buy the text at the BU Bookstore. If you have a textbook from another source you can also purchase an access code directly from WebAssign with a credit card. Log into WebAssign using the information below and then hit the button for registering with a credit card.

To log on to WebAssign:

Username: Your regular acs login name

Institution Name: bu

Password: BU Student Number U12345678 with no dashes or spaces

Getting the most out of WebAssign

You have two chances to submit each assignment. Use your submissions wisely. Note that you can submit the answers to each question individually - you do not need to fill in answers for the whole assignment first. Each time you submit, WebAssign tells you whether you are right or wrong, and then you another chance to correct anything that was wrong. Numbers and variables are randomized, so everybody in the class gets a slightly different problem. Grading is done automatically and is recorded soon after the assignment deadline. Another handout provides some additional thoughts on how to reconcile WebAssign homework while doing your best to prepare for non-web-based examinations.

Discussion Sessions

The discussion sessions will be conducted in sections of no more than 25 students, which will meet each week for one hour except as noted in the syllabus. A Teaching Fellow (TF) will lead the class discussion by using the *Questions* at the end of each textbook chapter and reviewing some of the *Quick Quizzes* and *Examples* in the text. Discussion sessions are not homework problem solving sessions. The TF can answer any question in detail regarding homework that has already been turned in for grading. You will be able to ask your TF for general help or hints with your assigned homework problems. Do not expect the TF to solve the problems for you. The discussion sessions provide an opportunity to work through some of the conceptual ideas of classical physics in an informal setting, with the expert guidance of a Teaching Fellow. The discussion TFs are there to help you prepare properly for examinations in physics. Please have your TF give feedback on your homework notebook solutions.

Laboratory Sessions and Reports

The schedule of lab experiments for the course is included in the syllabus. Write-ups for each experiment are available on the course website. You will need to print these write-ups yourself since no hardcopies will be provided. During each 3-hour lab session, you are expected to perform the experimental measurements, analyze the data, and write the lab report. The lab reports may be written on loose leaf paper of your choice, *i.e.*, no lab book is required. Since these reports are to be turned in to your laboratory teaching fellow at the end of your lab session, you should prepare as much of the lab report as possible before coming to your lab session. The physics teaching laboratory rooms are located along the B1 – B25 corridor in the basement of SCI and in rooms SCI-134 and SCI-136. The room assignments for each lab may change from week to week. Please check the location of your lab each week on the schedule posted on each lab door and on the PY211 Bulletin Board. **You are required to complete all 8 labs during the week assigned.** There are no makeup sessions.

Midterm and Final Exams Dates

Two midterm exams will be given *Monday evenings* on the following dates:

Midterm #1 – Monday, October 6, 8:00 – 9:30 PM SCI-107

Midterm #2 – Monday, November 10, 8:00 – 9:30 PM SCI-107

The combined section final exam date and time is the standard block time for our course day and time (TO BE CONFIRMED):

Final Exam – Friday, December 19, 6:00 – 8:00 PM

Please reserve these dates on your calendar since there will be no makeup exams.

Course Grade

Your letter grade for the course will be assigned on the basis of the total score you accumulate throughout the course. Each factor will contribute as follows:

Homework and Quizzes	20%
Lab Reports	15%
Midterm #1	20%
Midterm #2	20%
Final Exam	25%

Academic Conduct

Students enrolled in this course are expected to follow the Boston University Student Code of Academic Conduct for all assignments and exams. Violations of the code must be reported to the Dean's office. For more information, visit the following website:

<http://www.bu.edu/cas/academics/programs/conductcode.html>.

Course Lecture Notes and Other Material

Students enrolled in this course are allowed to share with other enrolled students the course materials, notes, and other writings based on the course materials and lectures, but may not do so on a commercial basis or otherwise for payment of any kind. Please note in particular that selling or buying class notes, lecture notes or summaries, or similar materials violates copyright and interferes with the academic mission of the College. Such conduct is a violation of the student code of responsibility and therefore subject to academic sanction.

Lab Report Format

Title of experiment and your name, ID#, TF, and lab partner.

Introduction/Theory: Write your own brief paragraph summarizing the objectives of the experiment, including physical principles, theory, and concepts involved.

Experimental Setup/Procedures: Write a brief paragraph describing the apparatus and the specific techniques being used to perform the experiment. Discuss how you actually made the measurements.

Data Analysis, Graphs, and Tables: Prepare the basic equations and tables that you will need in order to perform the calculations required to analyze your data. This part should be well organized so that you can clearly tabulate your final answers in your report.

Conclusions: Write a brief paragraph summarizing the results and conclusions derived from your data. Be sure that your conclusions are supported by your data. Discuss any inconsistencies between your result and what you expected to be the outcome of the experiment.

Questions: Answer the questions listed in the lab write-up. Your TF may delete or modify some of the required questions. These changes will be announced during the lab introduction.