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 Spring 2009

Lectures
Section A1 T, R 9:30 – 11:00 AM SCI 107 Professor Miller
Section B1 T, R 2:00 – 3:30 PM SCI 107 Professor Ludwig
Section C1 T, R 5:00 – 6:30 PM SCI 107 Professor Jariwala

All exams, homework assignments, and labs are the same for all sections. The three sections are graded as a single class, with grade divisions determined jointly by the three professors according to the criteria given below.

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. It is very important that these math requisites are met in order to insure successful completion of PY 211.
Textbook

Physics for Scientists and Engineers, 4th Edition (2008), Volume I, Chapters 1 - 20
Douglas C. Giancoli

The textbook is available at the BU bookstore and from various online sources. The bookstore version is bundled with a Student Study Guide and Selected Solutions Manual. The Study Guide is optional but is a useful resource. Please note that only Volume I of the textbook is required for this semester.

CPS Response Pad (“Clicker”)

Classroom Performance System (CPS) Gen2 RF Response Pad

The CPS response pad is also available at the BU bookstore. These are the same RF response pads as used in CH101 and CH102. After purchase, you must register your pad at http://www.einstruction.com using the Class Key given in lecture. There is an additional registration charge that will cover all courses this semester that also use the CPS system. Please bring your response pad with you to each lecture meeting.

Course Syllabus

The course will cover selected sections from Chapters 1 through 20 of the textbook with few exceptions. The detailed schedules of lectures, labs, exams and homework assignments are given on the course syllabus posted on WebCT. Due dates of all assignments given in the syllabus are firm and will not be extended.

Lectures

Attendance at all lectures is required and will be taken using the CPS response pad system. Preparation for class 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. The lectures provide new material as well as material from the textbook; hence, for good performance in the course, it will be necessary for you to take notes during the lectures.

Course Web Site     http://webct.bu.edu

To access the course website, start at http://webct.bu.edu, select My WebCT at the right of the screen or find the combined course title for CAS PY211. To login, use your regular BU login user name and Kerberos password. This web site will contain all the course information and a variety of useful physics resources. You will also be able to view your grades, teaching fellow and office hour information, homework assignments and solutions, etc.

Homework

There will be a homework assignment given nearly every week of the semester that is not interrupted by a break. Homework sets are to be submitted in the boxes located in the basement of the Metcalf Science Center. You may work together to start a problem, but the work you submit must be your own. Please remember that homework 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. Outside of office hours, please use the email account below for homework questions. The due dates of all problem sets are given on the syllabus. Generally, assignments are due Fridays at 5:00 PM.
Special Email Account
For questions about homework, please send email to py211@physics.bu.edu. Here the PY211 Teaching Fellows will attempt to answer your questions in a timely manner. For quicker response, please use the subject line in your email to indicate the specific question.

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

Discussion Sessions and Conceptual Exercises
Discussion sections are a required part of the course. The discussion sessions will be conducted in hour-long sections that meet each week 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 Examples and Exercises in the text. 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. 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. A conceptual exercise is given at the end of each discussion period. You may work in small groups to complete the exercise which should then be returned to your TF for grading.

Laboratory Sessions and Reports
Laboratory sections are a required part of the course. The schedule of lab experiments for the course is included in the syllabus. The complete information about all of the labs is available at http://physics.bu.edu/ulab/all_labs.html. You will need to print the pdf file of the write-up for the assigned lab yourself since no hardcopies will be provided. Be sure to complete the pre-lab worksheet prior to going to lab since some use online simulations. 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 will 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 must complete all seven labs for this course, during the weeks they are assigned. There are no scheduled makeup labs.

First Laboratory Assignment
The first lab on Graphical Analysis is a lab that you should do at home using the online simulations in the pre-lab to collect your data. Prepare the lab report according to the format given below and turn the report in to your Lab TF during your second scheduled lab.

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.

Midterm and Final Exams Dates
Two midterm exams will be given out of class on the following dates:

- Midterm #1 – Tuesday, February 17, 8:00 – 9:30 PM (Monday schedule)
- Midterm #2 – Monday, April 6, 8:00 – 9:30 PM

The combined section final exam date and time will be determined and announced soon.

Final Exam will most likely be in the evening of May 5 or May 6.

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, Exercises 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, please visit the following website: