Physics 213

General Physics II

Fall 2004

Lecture Location:	Room 153, Chem-Phys Bldg.
Lecture Time:	TR 9:30-10:20am
Lecturer:	Prof. Ganpathy Murthy
Recitation Location:	CP 183
Recitation Times:	MW 9:00-9:50am (Section 001)
	MW 10:00-10:50am (Section 002)
	MW 11:00-11:50am (Section 003)
	MW 12:00-12:50am (Section 004)
Lab Location:	CP 167
Lab Times:	M 4:00-5:50 (Section 001)
	T 4:00-5:50 (Section 002)
	W 4:00-5:50 (Section 003)
	R 4:00-5:50 (Section 004)
Office:	Room 387D, Chem-Phys Bldg.
Office Hours:	MTW 1:15 PM – 2:15 PM (sharp), and by appointment
Telephone:	257-4729
E-mail:	murthy@pa.uky.edu

You **must** attend the recitation section to which you have been assigned. Since there are several recitation sections which are held simultaneously, learn your recitation section number, your meeting time and place (see the SCHEDULE OF CLASSES) and your recitation instructor's name.

The laboratory is administered as an integral part of this course and will count for towards your final grade.

Overall, this may be one of the most difficult courses you will take at this University. Success in this course will require your committment, diligence, and persistence. A good rule of thumb to keep in mind is that you should be putting in about 4-5 hours of work outside class for every hour of formal instruction. Since there are 5 hours of formal instruction per week in this course, you should be spending at least 20 hours per week outside class on this course reading the textbook, solving the practice problems, coming to office hours for help, etc.

Course Description

Goals: To think analytically, and retain, organize and employ facts purposefully, critically and effectively. To strive to harness this way of thinking to help you understand, assess, appreciate and criticize modern science and technology.

PHY 213 is the second semester of a two semester sequence in introductory physics for students who will use some physics in their future careers, which may involve such diverse fields as Chemistry, Biology, or Medicine. In PHY 213, you will study Electricity, Magnetism, Optics, and some Modern Physics.

Please read this entire syllabus carefully, and refer to it often. If you have any question about the structure or administration of the course, you are likely to find the answer here.

Textbook

The textbook for the course is **Physics**, *Fifth Edition*, by Douglas C. Giancoli. One of the most important strategies for successfully learning the material (and getting a good grade) is for you to read the corresponding sections of the text **before** you come to class, as lectures will be spent expanding on, rather than repeating, the textbook's contents. Another important resource is the web-based tutorial package PhysicsNow, which has a multitude of worked examples.

Class Meetings

PHY 213 meets formally for four hours per week. *You should expect to spend at least four hours studying physics outside of class for each hour you spend inside.* The lecture class will meet two hours per week (TR 9:30 AM) in the lecture/demonstration hall CP 153. The lectures will roughly follow the textbook, but will augment, not reproduce, the reading assignments; I will assume that you have read the assignment **before** coming to class. Unless explicitly mentioned in class, students are responsible for **both** material assigned as reading (*even if we do not "cover it" in class*) and material presented in lecture. These lectures will be devoted to examining your current conceptions, demonstrating physical phenomena, describing quantitatively the characteristics of physical phenomena, and establishing relationships among them. These relationships are most easily expressed in mathematical terms. While the only mathematical prerequisite for this course is Algebra, bear in mind that a prerequisite represents the minimum that you have to know when you enter the class. You will definitely be learning new mathematics during this course.

Lecture time will also be devoted to teaching problem-solving skills needed to do the assigned homework. After each lecture class, and **before** the next, try to solve the relevant problems in the current homework. You can practise on the web-based Physics Now package, which will guide you through the solution of multi-step problems. At the times appropriate to your section on Mondays and Wednesdays, we will meet in a recitation class (CP367), where some of the problems from the previous week of classes will be discussed. Sometimes you will also be assigned Tutorials to enhance your qualitative understanding of the material. You will work on these Tutorials in small groups. Make sure that you take advantage of the opportunity to *ask for help* during office hours, recitation, as well as in lecture, and be prepared to communicate your points of confusion as they arise.

Our emphasis will be on an understanding of the underlying physics concepts as well as on problem-solving skills. In addition to being able to solve all of the assigned problems, you will also be expected to be able to apply the concepts involved in these problems to somewhat different situations. To do this successfully, the student is encouraged to focus on gaining an understanding of the physical concepts involved rather than merely learning to memorize formulas and plug in numbers. This may involve qualitative and sometimes creative answers to questions or problems. It will thus be good practice for the exams if you attempt to do additional problems from the textbook. It is strongly recommended that you try to do many of the textbook problems after each lecture. Some practice problems from the textbook are given in the Lecture/Recitation Schedule which accompanies this syllabus. *These are not the homework problems, which are Web-based and described below in the section on Homework Grade.* However, the practice problems are very valuable in understanding the course material. To give you an incentive to solve the practice problems, at least one practice problem on the Lecture/Recitation Schedule will appear in each midterm and in the final.

Examinations and Grading

Your course grade will be determined as follows:

In-class exams (3 x 100)	300
Final exam	200
Homework grade	200
Lab grade	200
Total	900

Your course letter grade will be determined on the following basis: An overall score of 721 or higher (out of 900) will fetch a grade of A: Between 631 and 720 a grade of B: Between 541 and 630 a grade of C: Between 451 and 540 a grade of D. Any overall score 450 or below will be worth a grade of E.

Exams: There will be three fifty-minute midterm exams and a two-hour final exam, roughly half of which will be devoted to the material covered after the last exam, the other half comprehensive. The midterms will be on September 21, October 19, and November 16 during class hour. The final exam will be on Tuesday December 14, from 10:30 am - 12:30 pm in CP153. Any student who cheats on any exam will receive a grade of *E* for the course, and may be subject to further disciplinary action by the university. **Communication between students is absolutely forbidden during quizzes and exams**. If you have a question, you should ask the instructor, who will be present.

If you miss a exam without a valid excuse, you will receive a zero for the exam. If you have a valid excuse (e.g. signed note from a physician or a university official), present it to the instructor who may request further documentation. An excused absence *always* requires a written request. It must be provided to the recitation instructor at least one week in advance except for unexpected emergencies in the immediate family or for the student.

If you miss a single exam with an excused absence, you will be given either a make-up exam (which will not be less demanding than the exam missed), or a calculated replacement grade to restore the points lost on the missed exam. In the latter case, your grade for the missing exam will be calculated from your ranking on the other fifty-minute exams. If you miss the final examination or a fifty-minute exam, you may, upon request, get an *I*-grade *only* if you have a valid excuse and the average of your exam scores indicates a possibility of passing the course. You will have to complete the course at another time.

If you wish to submit a exam for re-grading, *first make sure that you understand how to do the problem correctly* (see the posted solutions, for example). Then, within a couple of days of receiving your exam back, provide an explanation of your request on a separate signed sheet of paper, and hand it to your recitation instructor who will forward it to the grader. Make no marks on the solution that you submit for re-grading, so that it can be compared with the photocopy on file. (Exams will be photocopied before they are returned.) *Any appeals concerning grades for exams* **must** *be resolved within two weeks of receiving your exam back. At semester's end, do* **not** *appeal to your recitation instructor for a reconsideration of a score assigned weeks previously.*

Homework grade: We will use a Web-based system for homework assignments in PHY213. Your first step is to obtain a computer account at UK (if you don't already have one) so that you can get on to the Web. Next you should register yourself at the homework website **https://hw.utexas.edu** by going to the website and following instructions. You will need your student ID number, a "unique number" for the course, which is **21304**. You will also need to create a private password for yourself. Each Wednesday the assignment will be available at the homework website to download and work on, and will be due the following Wednesday by 5:00pm. Solutions will be available at the homework website by Thursday morning.

All the problems are graded by computer. You are allowed three tries for each problem, with 7% of the score being subtracted for each additional try. Note that while the conceptual framework for each problem is identical, different students will typically have different numerical values in their assignment. You can log on to the website as many times as you want to submit answers. Before each lecture, read the corresponding assignment and read/try the homework. After each lecture, do the corresponding homework *before* the next lecture. Before your Tuesday recitation, you should have attempted to solve all of the problems assigned in the current homework. Any difficulties should be sorted out during recitation and/or office hours.

Web-based help Physics Now: This year we have introduced a web-based tutorial package called Physics Now. This package is designed to take you step by step through complex problems, giving hints along the way. In the first class, you will be given access cards for this package. The first step is to go to the website **http://bca.brookscole.com/physics_d** and use the pin number inside your package to create your account. Once in, play around to familiarize yourself with the available features, which include simulations of physical phenomena and solved problems. Though this package is based on a different text, by Serway and Faughn, the material is the same as what we will cover in our course. **This package is purely for your education, nothing you do here will be graded. However, please take full advantage of it.**

Recitations: Physics is not a spectator sport! You will make best use of the lectures if you attempt to become actively engaged. Ask questions about what you have read and make predictions about the outcomes of real or imagined experiments.

Sometimes in lecture, we will go over several *"concept questions";* the purpose is to focus our attention on important concepts. We will discuss these questions first individually, then in informal groups formed in class, and then as a whole class. However, no formal grade will be associated with this activity.

During recitations, which will be held in room CP367, your recitation instructor will solve practice problems and the assigned Web homework problems. The practice problems are not for credit, but they provide valuable help in understanding the material. Note that at least one practice problem will appear on every midterm and on the final.

University Studies

Phy 213 may be taken to fulfill part of the *Natural Sciences Requirement* in the University Studies Program. A good scientist or engineer must possess knowledge of their discipline, *and* be able to communicate that knowledge effectively. The writing component of the University Studies will be satisfied through the **clear, coherent, and orderly** presentation of the physics principles involved in your solution to problems in problem sessions and exams, using not only equations and numbers, but also words and diagrams! A solution is not complete when you write down the final numerical answer; you must demonstrate that the answer makes physical sense.

Course Evaluations

Course evaluations are an important (and mandatory!) component of our Department's instructional program. An on-line course evaluation system is in place to allow each student ample time to evaluate each component of the course and instructor, thus providing the Department with meaningful numerical scores and detailed commentary while minimizing the loss of instructional time in the classroom. The evaluation window for Fall 2003 will open on Thursday, 20 November 2003 and close on Wednesday 10 December 2003. To access the system during this time, simply go the Department of Physics Web page at www.pa.uky.edu and click on the link for Course Evaluations; then follow the instructions. You will need to use your student ID number to log into the system, and this will also allow us to monitor who has filled out evaluations. However, when you log-in you will be assigned a random number that will keep all your comments and scores anonymous.

Resources

PHY 213 is an intensive and demanding course. Consult often with your lecturer and recitation instructor. You are encouraged to ask both of them, or *any* of the other recitation instructors, questions during their posted office hours. (See the RECITATION SECTION page for a list of office hours.)

- PHY 213 WEB PAGE
  - Located at **http://www.pa.uky.edu/~ murthy/courses/phy213f04/**.
  - You can also surf there from the Home Page of the DEPARTMENT OF PHYSICS & ASTRONOMY at **http://www.pa.uky.edu/**.
  - Check here for important announcements you may have missed in class.
  - Is a convenient place from which to e-mail your lecturer.
  - Contains an updated copy of this SYLLABUS and the LECTURE/RECITATION SCHEDULE.
  - Contains links to other useful sites.
  - The homework website is **https://hw.utexas.edu/**
  - The Physics Now website is **http://bca.brookscole.com/physics_d**
  - For assistance in obtaining a computer account, contact USER ACCOUNT SERVICES, Room 110 McVey Hall, 257-2249 (**http://www.uky.edu/helpdesk/**). You may create an account through the Web page at **http://www.uky.edu/userids**.
- CHEMISTRY-PHYSICS LIBRARY
  - You may find that other textbooks may provide you with a different perspective if you have difficulty understanding something in the course textbook.
- RESOURCE ROOM in CP 148
  - Is a comfortable environment for studying.
  - Is staffed during the day with teaching assistants who are paid to answer your questions.
- CHEMISTRY-PHYSICS MICROCOMPUTER LAB in CP 148.
- TEXTBOOK WEB SITE at **http://vig.prenhall.com/catalog/academic/product/0,4096,0136119719,00.html**
- Fellow students
  - You are encouraged to collaborate on in-class work and on homework problems.
  - On recitation quizzes and exams, you must show only your own work and not consult with others.