PHYS 114, Winter 2007-8

Contemporary Physics II

## Lecturer

Prof. Avijit Ghosh (*avijit@physics.drexel.edu*)

**Office**: Disque Hall, Room 908/909

**Phone**: (215) 895-2726

**Office Hours:** F 2-4pm

**Lectures PHYS 114-A** MWF 10:00-10:50 am, Curtis 258

## Recitation Instructor Travis Hoppe

**Recitation: PHYS 114-002** W or F 2-4/4-6pm Disque 711

## Textbooks

Matter and Interaction, Chabay & Sherwood, Wiley. Copies of this book have been ordered and should available in the bookstore.

## Course Webpage

I will make certain materials available, including images, links, copies of documents handed out in class at :

http://www.physics.drexel.edu/ thoppe/teaching/PHYS114.W08/index.html

## Course Overview

This will be one of the more unsual physics classes that you've ever taken, and that we've ever taught. It will combine classical and modern (e.g. Quantum Mechanics) concepts in a single lecture. You will be required to do all of the standard paper and pencil physics, and will continue simple programming exercises in Visual Python.

### Lectures

We will meet three times a week for 1 hour. Lectures will consist primarily of information based on the readings, though there will also be some in-class demos. Homework and reading assignments will be given out in class, and homeworks will be due in lecture *at the beginning of class*. You are obviously expected to attend all lectures, and there is an explicit class participation component to your final mark. In other words, ask questions!

### Recitation

Traditionally, recitation is a much more informal part of the class. We will meet in the Physics computing lab for 4 hours each week.

**Note:** These are Linux workstations (the traditional tools of most physicists). If you spend a lot of time in the department (which we hope you will), you will need know enough about Linux and other Unix-like tools.

For those of you who have not taken Contemporary Physics 113, you will be expected to know both the necessary unix and visual python to complete the assignments.

A simple unix tutorial can be found at :

http://hven.swarthmore.edu/~ burns/unix.html

Information (and tutorials) on visual python can be found at :

http://www.vpython.org

The recitations will consist in computer demos, a little programming on your own part, discussions about the homework, and will supplement the material that we're covering in lecture. There will time dedicated to doing exersizes as well as programming this quarter.

Recitation is an important and required part of the class, and the programming and other exercises will comprise a significant fraction of your grade.

An additional two hours of recitation will consist of going over example problems as well as discuss topics covered during the lecture.

## Grading Policy

• $20\%$ – Recitation: As discussed above, you are to attend all recitations, and work out the computer modelling problems given. In addition, there may be small quizzes over the course of the term.

• $10\%$ – Class Participation: You are expected to attend all lectures and recitations, to participate in discussions, and to ask questions. Some of the topics we'll be covering are quite esoteric, so if we don't have feedback, we can't be sure you're getting it.

• $20\%$ – Homework: Homework will be given weekly. It will be assigned on Wednesday in lecture, and will be due the next Wednesday. A 10% penalty will be given for each day of lateness. The lowest homework will be dropped from your final average.

The problems will primarily be taken from your book, though there will be some which are not. You are encouraged, and expected to discuss your homework with others, but the work you submit must be your own. Copied homeworks (and you'd be surprised how easy this is to detect) will earn a zero for all parties involved.

• $20\%$ – **Midterm**: At approximately week 6, we will have an in-class midterm. The questions will be mostly similar in structure to homework problems, so you'd be well-advised to review your homework. However, there will also be some short-answer questions as well.

I will pass out a review sheet a week before, and we will have a review session (outside normal hours) several days prior to the exam.

• $30\%$ – **Final Exam**: During the final exam period, we will have a 2 hour final. It will be similar in structure to the midterm, and will be comprehensive over the entire course.

## Topics To be Covered

Week 1: Angular Momentum (Chap. 10)

Week 2-3: Statistical Thermodynamics (Chap. 11)

Week 3-4: Statistical Kinetics / Engines (Chap. 12)

Week 5: Midterm

Week 6: Electric Fields (Chap. 13)

Week 7: Matter and Charges (Chap. 14)

Week 8: Electric Fields and Charges (Ch. 15)

Week 9: The Electric Potential (Ch. 16)

Week 10, 11: Catchup !!