

Physics 24 · General Course Information · Spring 2010

Physics 24 is the second semester of introductory physics, and deals with the subjects of electromagnetism and electronics. It relies on the material of Physics 23 (or Physics 16), mechanics, as well as the first semester of calculus (Math 11). Those who have not had these prerequisites (or their equivalents) should see me right away.

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My official office hours this semester are Monday 10–11 and Tuesday 3–4. You should feel free to track me down at other times, however — I am quite often in my office or in one of my laboratories (Merrill 112 or Merrill 113); and I am usually available via email. I am always happy to make an appointment to see you.

Textbook There are two texts for this course. The first is *Physics for Engineers and Scientists, Vol. 2, 3rd ed.* by Hans Ohanian and John Markert, which may be purchased at the Amherst Bookstore. (The ISBN for this volume is 0-393-93004-1, if you wish to purchase it from an online vendor instead.) The second is *An Introduction to Error Analysis, 2nd ed.* by John Taylor. I will try to have a few copies of both available in the library. You will also need a so-called “PRS Transmitter” — these are available for checkout, free of charge, from the Computer Center, SMudd 110. **Please obtain the texts and the PRS transmitter as soon as possible.**

Class Meetings The course meets M W F at noon and R at 1 p.m. in Merrill 211 for lectures, discussion, and problem solving, and W afternoon at 2 p.m. for lab in Merrill 208. This year I am going to try again a little experiment in which the hour meetings are *not* (for the most part) going to be traditional lectures. I will provide structure and an overview of the topics, and lots of fun demonstrations, but some of the time you will be actively answering questions that I pose to you in class.

Reading Assignments Since the lecture component won't necessarily cover every topic you'll be responsible for, you are required to complete the assigned reading before each class meeting. **Keeping up with the readings is one of the most important things you can do in this class, even if you don't understand everything fully on the first attempt.** Come to class or seek me out with questions as they come to you, and I'll be happy to help you out.

Lab Meetings Successful completion of all of the laboratory exercises is MANDATORY in order to pass the class, as is laboratory attendance. For more information, please see the Laboratory Information handout.

Problem Sets Each problem set will be assigned on a Wednesday and will be due on the following Wednesday at the beginning of lab. No late work will be accepted without advance permission. The problems assigned are really a “minimal” set — you are strongly encouraged to try additional problems, and if you do, I would be delighted to discuss the answers with you.

Problem Help Sessions In order to help solidify your grasp of the material, I will try to set up an additional problem help session once a week in the evenings. These sessions will probably be run by a T.A. this semester.

Exams There will be two midterms and one final examination. These examinations will cover *all* topics from the assigned readings, whether or not they have been discussed in class — so make sure to do the readings and ask questions!

Grading Policy Your final grade breaks down something like this:

- Homework: 20%
- Labs: 20%
- Midterms (each): 15%
- Final Exam: 30%

Doing well on the in-class questions over the course of the semester can reduce your final exam weight by as much as 10%.

Miscellany This year we will also be using the Amherst CMS web site. Problem sets and other handouts will be found there.

The Honor Code reads, in part:

Every person's education is the product of his or her intellectual effort and participation in a process of critical exchange. Amherst cannot educate those who are unwilling to submit their own work and ideas to critical assessment. Nor can it tolerate those who interfere with the participation of others in the critical process. Therefore, the College considers it a violation of the requirements of intellectual responsibility to submit work that is not one's own or otherwise to subvert the conditions under which academic work is performed by oneself or by others.

On the homework assignments it is permissible (and I encourage you!) to work in small study groups to solve the problems. In the end, however, it is important to write up (individually) and submit what *you* understand of the material. Do not make use of any homework solutions other than those I hand out in class, including any from the internet; and of course no collaboration of any kind is allowed on the examinations. Please refer to the Lab Information handout for information on intellectual responsibility as it pertains to the laboratories. Honor code violations will result in a failing grade in the course.

Physics 24 · Tentative Syllabus · Spring 2008

This syllabus is subject to revision. Please do the assigned readings *before* the week for which they are required.

| Week of | Topic | Ohanian | Lab |
|------------|--|--------------|--------------|
| Jan. 25 | Electric Forces and Fields | 22, 23 | Introduction |
| Feb. 1 | Gauss's Law | 24 | TBA |
| Feb. 8 | Electrostatic Potential and Energy | 25 | TBA |
| Feb. 15 | Capacitors and Dielectrics | 26 | TBA |
| Feb. 22 | Electric Current | 27 | |
| | Midterm Exam I: Feb. 24 | 22–26 | |
| Mar. 1 | DC Circuits | 28 | TBA |
| Mar. 8 | Magnetic Forces and Fields I | 29, 30 | TBA |
| Mar. 15 | Spring Break | | (no class) |
| Mar. 22 | Magnetic Forces and Fields II | 29, 30 | TBA |
| Mar. 29 | Electromagnetic Induction | 31 | TBA |
| Apr. 5 | AC Circuits | 32 | |
| | Midterm Exam II: Apr. 7 | 27–31 | |
| Apr. 12 | Electromagnetic Waves | 33 | TBA |
| Apr. 19 | Optics I | 34 | Light |
| Apr. 26 | Optics II | 34, 35 | Optics |
| May 3 | Interference and Diffraction | 35 | Interference |
| TBA | Comprehensive Final Examination | 22–35 | |