

**Course Information**

Lecturer:

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Lab Instructor:

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Office Hours: TBA

Teaching Fellow in Lab:  
Daniel H. Guest

Course Times: lectures: MWF 11-11:50; labs: Mon and Tues 2 -5.

Requisites: Physics 17 has Math 11 and Physics 16 (or their equivalents) as pre-requisites. If you have not taken these courses or you have some doubt about your background, please see the instructor right away.

Textbook: Paul Tipler and Gene Mosca, Physics for Scientists and Engineers, sixth edition, Freeman press (2008). Copies of the book are available at Amherst Books as well as at Jeffery Amherst Textbook store. The book is required for the course.

Communication: You should consult the College's Blackboard web page for this course for announcements, assignments, solutions to homework problems and most other course documents. You should check that page regularly for updates and course-related postings. In addition, you are responsible for noting and following up on any announcements made during the lectures and the scheduled laboratory sessions. Announcement in any one of these venues will be considered sufficient notification.

Attendance: Regular attendance at lectures is expected. Persistent absence without adequate explanation will result in a lower grade than is indicated by just the other factors

that count for the grade. Successful and timely completion of **all** the laboratory exercises is required for a passing grade. The only exceptions will be for grave medical or personal crises, and in those cases, documentation from the Dean of Students office supporting your cause is required.

Course Requirements & Grading: Your work in the course consists of the assigned readings, the weekly homework assignments, the lab performance and reports (both formal and informal, see below), three mid-term exams and a final exam. Evaluation of your work in the course will be based on all of these pieces.

*Grading breakdown:* Your final grade for the course will depend on written work roughly as shown below. In addition, your grade will be adjusted by subjective considerations such as class participation, active participation in lab, and overall improvement in the course. Note again, however, that satisfactory completion of **all** labs, lab exit interviews, and lab reports is a necessary condition for obtaining a passing grade.

Midterm exams (total): 35%

Final exam: 35%

Lab: 20%

Homework: 10%

*Homework:* Readings from the text and homework problems will be assigned weekly. The readings will help prepare you for the material to be covered in the lectures, and you should read them in advance of the corresponding lectures. The problems constitute a relatively small portion of the grade, but that belies their importance. They are absolutely necessary in attaining the sort of functional understanding of physics that is the goal in this course. If you slack off in doing the homework, you will undoubtedly suffer when it comes to the exams. You should try to work the problems thoroughly and seek help only after you've banged your head on them a bit. Working problems with your fellow classmates will help you avoid pitfalls and mitigate frustration. Rules for collaboration and citation of sources on homework are detailed in the Statement of Intellectual Responsibility below.

The problems will be assigned on Friday and due on the following Friday by the end of class. Late homework presents severe organizational problems (solutions are posted on the Blackboard page and the graders need to get the pile in a timely manner). As a consequence, the following **strict** rule applies: Late homework will be accepted until 5 pm the day it is due, but will only receive half credit. Anything turned in after 5 pm will not receive credit, although it will be "graded" to give you some feedback. Problems will be graded by student graders and will be perused by the instructor before being returned to you.

*Exams:* There will be three mid-term exams during the semester and a final during exam period. Midterm exams will focus on material presented since the last exam, but in this sort of a course they are necessarily cumulative. The mid-term exam schedule is given in

the attached syllabus. If any of the exam times present a serious conflict, you **must** inform the instructor **at least one week in advance**. In general, extracurricular activities do not constitute a serious conflict.

*Labs:* Labs will meet weekly in Merrill 208. The schedule of experiments is included in the attached syllabus. The Physics 17 Lab Manual, will be distributed during the first week of the course. Before coming to the first lab session you should read the *General Instructions* section and the *Comments for Formal Laboratory Reports* section of the Physics 17 lab manual. Before coming to lab each week you should carefully read through the experiment in the lab manual. The lab instructor will generally make some introductory comments about the experimental apparatus at the beginning of the lab, but will assume that you have read the lab itself and have a general idea what the physics goal is and what measurements you'll have to take.

Some labs are *informal*. The experiment and the analysis are to be completed in lab, and a clear account of the results is to be written up in the lab notebook. At the end of the lab, an "exit interview" will be conducted by either your instructor or the Teaching Fellow (TF). When they determine that you have satisfactorily completed the laboratory, they will initial your notebook and check you off as having finished the laboratory. A few experiments will require a *formal written lab report*. Formal reports are due within a week from the end of the lab period. They will be graded by the TF and returned. Your final grade will depend on these reports, on the exit interviews, and on the quality of the record keeping in your notebook (which will be evaluated when you turn in your notebooks at the end of the semester).

#### Additional help:

Of course, you are encouraged to utilize the instructors' office hours. In addition, evening problem/review sessions will be run by an instructor or by an undergraduate TA (see course web page for details).

You are encouraged to take advantage of the Quantitative Skill Center for instruction in problem solving. The QSC is conveniently located at 202 Merrill. See their web page <http://www.amherst.edu/~qcenter> for more details.

The Peer Tutoring program is run by the Office of the Dean of Students. If you need a few hours a week of tutoring they can provide you with a tutor, often a physics major. Contact the instructor or the Office of the Dean of Students for details.

The textbook comes with some online resources for practice problems and study help. Please use those resources.

#### **Statement of Intellectual Responsibility:**

Homework - Co-operation on the weekly homework assignments is encouraged. However, co-operation **does not** mean that some people do the problems and others copy them down. After you talk with your partners, you should complete the problems on your own putting down as your work only what you understand and can defend. If you consult other people, books, web sources and the like, it is important that you make a brief written

acknowledgement by citing the source of help. The only exception for this general rule is that you need not cite your instructors in this course or the course textbook.

Tests and Exams - The rules for the mid-term and final exams are markedly different from the ones for the homework assignments. On these occasions, you are almost completely on your own. You will be allowed only a calculator and writing instruments during the exams. No consultation with friends, books, or sources other than those explicitly authorized is allowed. A violation of these rules is a very serious matter, and may result in formal charges through the College's disciplinary process.

Laboratory Work - In addition to the general rules of intellectual responsibility, scientific integrity requires that you treat experimental data that you collect as inviolate. You should not erase or render illegible the primary data you enter in your lab notebook. You should not modify such data either whimsically or for some desired result. If you think you made a mistake in an entry, place a single line through that entry, and enter the correct item below. If you decide to disregard some body of data in your analysis, say so in your lab notebook and offer a reason for your decision, but do not tear out or otherwise eradicate the offending data. Under no circumstances should you "cook the books" and offer virtual or imagined numbers and propositions as actual observations. For more detail on the lab notebook and reports, please see the general instructions on labs in your lab manual.

**Approximate Syllabus**

| Week of |  |  |
|---------|--|--|
| Sep. 3  | Electric Charge and Field:<br>Chapter 21         | First HW handed out on Sep. 7, due Sep. 14. No Lab                                 |
| Sep. 10 | Finish Chapter 21, begin 22                      | HW 2 out Sep. 14, due Sep. 21<br>No Lab  |
| Sep. 17 | Chapters 22 and 23                               | HW 3<br>Lab 1: DC circuits (formal)  |
| Sep. 24 | Chapters 23 and 24                               | HW 4:<br>Lab 2: Intro to Scope.  |
| Oct. 1  | Chapters 24 and 25                               | HW 5<br>Lab 3: Capacitors<br>First Mid-term, October 3,<br>7 – 10 p.m.             |
| Oct. 8  | No Monday and Tuesday class<br>Finish Chapter 25 | No Lab   |
| Oct. 15 | Chapter 26: Magnetism                            | HW 6<br>No Lab   |
| Oct. 22 | Chapter 27                                       | HW 7<br>Lab 4: Inductors   |
| Oct. 29 | Chapter 28                                       | HW 8: No Lab<br>Second Halloween mid-term,<br>Oct. 31, 7 – 10 p.m.                 |
| Nov. 5  | Chapter 29, 30                                   | HW 9<br>Lab 5: RLC circuits (formal)   |
| Nov. 12 | Chapter 30, 31: Light                            | HW 10<br>Lab 6: Faraday's Law  |
| Nov. 26 | Chapter 31, 32                                   | HW 11<br>Lab 7: Properties of Light<br>November 28, Third mid-term, 7<br>– 10 p.m. |
| Dec. 3  | Chapter 32, 33                                   | HW 12:<br>Lab 8: Geometric Optics<br>(formal)                                      |
| Dec. 10 | Review   | Lab 9: Interference and<br>Diffraction   |