

PHYS 1312 Syllabus

University of Georgia, Fall 2009

Introduction

Welcome to Physics 1312! This is the second half of a two-semester introductory physics sequence, intended for prospective physics or astronomy majors (although not exclusively). This semester we'll focus on electromagnetism, one of the four fundamental forces of nature. The understanding of electric, magnetic, and optical phenomena as different aspects of the same underlying force was a crowning achievement of 19th century physics. Without this understanding, our modern electronic world wouldn't be possible.

The ordering of topics this semester will be different from the traditional sequence. We'll start with optics, the study of light and how it interacts with matter. You will then learn about electric fields and electric potential. You will see how to apply those concepts to study electric circuits and currents (moving charges). Next we'll discuss the magnetic field, and how electric and magnetic fields interact with each other.

As you know from your first semester of physics, this is a quantitative science, and much of the work in this course involves carefully setting up and solving model-based problems. You'll need to communicate your results in a variety of ways—mathematical and numerical expressions, graphs, diagrams, even “plain English.” Coming into this course, you should already be quite comfortable with college algebra, trigonometry, plane geometry, and both differential and integral calculus. You should also be well-acquainted with basic science concepts such as scientific notation, significant figures, units and dimensions, and graphing.

Basic Information

Instructor:	Dr. Craig Wiegert	Email:	wiegert@physast.uga.edu
Office:	215 Physics Building	Phone:	706-542-4023
Class:	MWF Period 2 (9:05–9:55), 221 Physics Building		
Lab:	Various times, 319 Physics Building		
Final Exam:	Monday, 14 Dec, 8:00–11:00 am, 221 Physics Building		
Office hours:	TBA		

Required Course Materials

- *Matter and Interactions II: Electric and Magnetic Interactions*, 2nd ed., by Chabay and Sherwood (Wiley). I strongly recommend this “black cover” edition over the first edition.
- *Experiments for an Introductory Physics Course*, 5th ed., by R. M. Wood and S. P. Lewis. This is the same lab manual from the first semester of physics, and will be used in your lab section. You may use the newer 6th edition if you wish.
- An Interwrite PRS RF response pad (“clicker”). Bring it to every class; we will be using clickers throughout the semester for participatory activities.
- A scientific calculator. A simple calculator such as the TI-30X series will do just fine, but a fancier graphing calculator is also acceptable.

Online Course Materials

- Online homework and practice problems will form an essential part of the course. You will access them, along with other course resources, with an account on the LON-CAPA system at <http://spock.physast.uga.edu/>.
- You will be subscribed to a low-volume email announcement list. It is important that you check your email daily.
- The [eLearning Commons](#) (the replacement for WebCT) will serve as another repository of course information: homework and exam solutions, grades, etc.

Other Student Resources

- Office hours are your chance to get one-on-one or small-group help on better understanding topics from class, or on homework assignments. Please make use of them; I can't address your questions if you don't ask!
- If you can't come to my regular office hours, or need additional help, please set up an appointment (by email, by phone, or in person) to see me outside of class.
- Tutors are available either through the [UGA Tutoring Program](#) at Milledge Hall, or directly through the Department of Physics and Astronomy.

Grading Policy and Assignments

Your overall grade will be determined from your course performance, weighted as follows:

- 20% Cumulative final exam grade
- 45% Three in-class exams (20%/15%/10% for highest/middle/lowest grades)
- 15% Homework grade
- 15% Laboratory grade
- 5% Reading quizzes and in-class activities

Letter grades will be assigned from your overall numerical grade according to the following:

A 90.0 **A-** 87.5 **B+** 85.0 **B** 80.0 **B-** 78.5 **C+** 75.0 **C** 70.0 **C-** 67.5 **D** 60.0 **F**

Overall numerical grades will *not* be rounded (i.e., 89.9 is still an A-).

The final exam is your opportunity to demonstrate that you have broadly and coherently mastered the course material. Therefore, if

- you haven't missed any midterm exams
- your total midterm exam grade is at the passing level
- your homework grade is also at the passing level
- your final exam grade exceeds your total midterm exam grade

then your final exam grade will *replace* your overall exam grade.

Any requests for a regrade of an assignment or an exam must be made no later than one week after the item is returned. For a regrade I will look at the entire assignment/exam, not just one problem, and this may raise *or* lower your score. Regrade requests (including those for online homework) should be accompanied by all your work.

Like any other measurement, grades possess a degree of uncertainty. Therefore, factors such as improvement, effort, and participation *may* help borderline grades. (Lobbying, however, will not.) There is no extra credit in this course.

Exams

There will be three in-class midterm exams and a cumulative final exam. All exams will be closed-book and closed-notes. You may use a scientific calculator *for arithmetic only*, not for algebra, calculus, or graphing; all memory registers and programs must be cleared. I'll provide you with a formula sheet for each exam, and will also post it to the Web before the exam. The purpose of the formula sheet is to focus your studying on understanding rather than memorization.

Exams will comprise both conceptual and problem-solving questions, similar to homework, practice problems, and in-class examples. Unless told otherwise, you must show your work on each problem in order to receive full credit. Partial credit is awarded (based on your work) for incomplete or incorrect answers, so it is usually in your best interest to attempt every problem. Detailed solutions will be posted to the Web after each in-class exam.

Exams are designed to test your understanding thoroughly and to distinguish among levels of performance. In order for exams to be effective assessments, raw scores will often be lower than the expectations created by the "standard" letter grade cutoffs. These raw exam scores will be converted into "rescaled" numerical grades. This conversion is based partly on the distribution of raw scores, but also on the difficulty level of the exam. A rescaled numerical grade will *never* be lower than your raw score. Also, unlike a typical curve, you are *not competing* against your peers; it is possible for everyone to get an A or B, for example.

If you need to miss an exam for a *legitimate and documentable* reason, you must contact me before the exam if at all possible, or else as soon as possible after the exam. Make-up exams will be given *only* for legitimate, documentable reasons and *only* if you notify me in a timely fashion. (An example of *unacceptable* documentation is a note stating only that you visited the health center, with no indication of the severity of your illness.) Do not simply presume that your situation or documentation merits an excused absence; that determination is not your prerogative. *Unexcused exam absences will result in an exam grade of zero.*

Homework

Regular practice with physics problems is crucial to your learning, so you will have weekly homework assignments. The assignments will generally be due every Tuesday, although class pacing and scheduling may necessitate different due dates, which will be announced in class. Assignments will be posted online, and will be a combination of handwritten and online form-based problems. Detailed solutions will be posted to the Web after the due date.

Written portions of assignments should be handed in to me directly or put into my mailbox in the main office, Room 201. (*Do not* slide anything under my office door.) These problems will be graded not only for correctness of the end result, but also for process. Be sure to express, clearly and legibly, the reasoning for your solutions.

Assignments will be weighted equally unless otherwise specified. I will drop your lowest two homework percentages in calculating your overall score. This policy compensates for the

unavoidable circumstances that may prevent you from submitting homework on time (e.g., illness, scheduled event, Internet failure, etc.). *Late homework won't be accepted or excused.*

Teamwork can be a very effective way to learn, so I encourage you to collaborate with your classmates on homework problems. However, don't mistake teamwork for plagiarism; *your solutions must be your own.* Copying or paraphrasing from someone else's work, or from *any* other source of homework solutions, is a violation of academic honesty policies. Since you can't collaborate on exams, homework is your best opportunity to develop your *own* problem-solving skills.

Reading Assignments

Regularly reading the textbook and working through its sample exercises is an *essential* part of your preparation for class. I don't expect you to understand everything in the textbook at first sight. However, your ability to learn *during* class will strongly depend on having already encountered the material *prior* to class. You should jot down notes and questions as you read; this will help organize your class notes and will remind you to ask for clarification.

Class Activities

You will often be asked in class to answer conceptual and quantitative questions, both individually and in small groups, and often using the "clickers". Your responses will be graded primarily on participation, although correct responses will receive a small bonus. These activities allow you to demonstrate your sincere effort and active class engagement.

At the end of the semester, the results of these exercises will be combined with your reading quiz scores as a component of your overall grade. As with homework scores, a comparable fraction of the activities and quizzes will be "dropped" to compensate for the occasional absence or problem with your "clicker". I will *not* accept a written record of your responses as a clicker substitute, or otherwise excuse any absence from class.

Academic Honesty

The University of Georgia has a comprehensive policy on academic honesty, described in a document entitled *A Culture of Honesty*. This document is available through the Office of the Vice President for Instruction or online at <http://www.uga.edu/honesty/>. This policy covers all academic work.

As a UGA student, you are responsible for knowing and understanding this policy. If you have *any* question about the appropriateness of your actions or your work, you are obligated to ask me for clarification.

I take the issue of academic honesty very seriously, and it is my responsibility to uphold the University's policy. This means, among other things, that I won't hesitate to report my suspicions of dishonesty to the Office of the Vice President for Instruction. Typical consequences of cheating on homework or an exam range from receiving a zero for that grade, to failing the course.

Student Responsibilities

- Above all, you have the right to expect courtesy from your fellow students, and the same will be asked of you. Courtesy includes the expectation that everyone will come to class ready and willing to learn and to interact, and able to ask or answer questions freely. Courtesy also implies that you arrive on time and stay until the end of class. Disruptions or distracting behavior will not be tolerated.
- You're responsible for everything discussed in class and all assigned reading (even for textbook topics not explicitly covered in class). Absence doesn't excuse you from this responsibility. Your understanding of physics (and your grade) *will* suffer if you skip class or neglect the preparatory reading.
- You're responsible for the material covered in the assignments. I can't emphasize enough the importance of homework! Just as with other areas of learning, your physics problem-solving skills will improve only by practicing regularly and conscientiously. You won't get much learning value from homework if you procrastinate, or if you depend on the efforts of others.
- Attend your assigned lab section and follow the TAs' instructions. Refer to the lab syllabus for more information. If you have lab-related questions, please see Mr. Tom Barnello in Room 310.
- Ask for clarification on anything you find unclear, ambiguous, or unspecified. This includes both course policies and physics topics. Ignorance is never a valid excuse.
- Know the policies in the [Undergraduate Bulletin](#) concerning withdrawals and incompletes. The following passage is particularly important:

Students are limited to four withdrawals during their undergraduate careers... Students who fail to drop a course or wish to withdraw from a course after the designated drop/add period for a term must withdraw through OASIS (Online Access to the Student Information System). An instructor also may withdraw a student from a course due to excessive absences as defined in the course syllabus. Withdrawals after the drop/add period will result in course entries on the academic record with grades of WP or WF as assigned by the instructor(s). A student who withdraws or is withdrawn for excessive absences after the withdrawal deadline of the semester is assigned a grade of WF except when the student is doing satisfactory work and Student Support Services is able to approve the withdrawal because of a hardship situation.

For withdrawals before the midpoint, I will enter a grade of WP even for technically failing grades, *if* I judge that you have made a sincere, significant effort in the class. *It is possible to earn a grade of WF before the midpoint*; don't assume otherwise!

If you don't complete the initial required administrative tasks of the course (e.g., the questionnaire), or are demonstrably not attending class and completing work, you may be withdrawn from the class for "excessive absence"—probably with a WF.

PHYS 1312 Class Schedule

Fall 2009

This is a brand-new course with an unconventional textbook, so the schedule is necessarily only an approximation. Parts of it are subject to change, *possibly including exam scheduling*.

Note that the midpoint withdrawal deadline is Thursday, 22 October.

Nature of Light and Geometric Optics	2 weeks
Wave Optics	1 week
Exam 1	Chapters 23, 24, supplement
Electric Fields and Potential	4 weeks
Exam 2	Chapters 13–16
Magnetic Fields	1 week
Electric Circuits	2 weeks
Exam 3	Chapters 17–19
Magnetic Force	1 week
Magnetic Induction and Maxwell Equations	3 week