Introduction

Welcome to Physics 1212, the second half of a two-semester introductory sequence. This semester we will focus on Optics, Electricity and Magnetism.

In the Optics part, you will be introduced to ray and wave optics and optical instruments. We then study electric fields and forces, currents and simple circuits. After a brief introduction to Special Relativity, we will discuss magnetic phenomena and end the semester with the topic of electromagnetic waves.

Physics is a quantitative science. As in the PHYS1211 course, we won’t neglect the qualitative and conceptual aspects of physics, but much of the work in this course will involve setting up and solving math problems. You will need to be able to communicate your results in a variety of ways—mathematical and numerical expressions, diagrams and graphs, and even “plain English.” You are expected to have a working knowledge of differential calculus, college algebra, geometry, and trigonometry in the context of physics, and to be acquainted with basic concepts such as units and dimensions, scientific notation, and significant figures.

If you don’t feel comfortable with your background in mathematics or mechanics, please come see me.

Basic Information

Instructor: Uwe Happek Email: uhappek@physast.uga.edu
Office: 236 Physics Building Phone: 706-542-2859

Class: MTWRF 1:00 - 2:00 PM, 202 Physics Building
Lab: Various times, Physics Building
Office hours: MTR 2:15 - 3:15PM, 236 Physics Building

Required Course Materials

- Physics for Scientists and Engineers, a Strategic Approach, Volume V and VI, 3rd ed., by Randall D. Knight (Pearson Prentice Hall). You may use older editions if you wish, or even any other calculus based Introductory Physics textbook, but you are responsible for knowing about any changes in content.


- A simple scientific calculator for exams, which must be non-programmable, non-graphing, and non-symbolic. Examples of acceptable calculators include the TI-30X series or the Sharp EL-531. The use of calculator graphing, algebra-solving, or programming functions will not be permitted for any exam, nor will PDAs, cellphones, etc.
Online Course Resources

- The course site on eLC will be used to disseminate course information: announcements, exam solutions, practice problems, etc., including grade information.

Online assignments are an essential part of the course. You will access them with an account on the LON-CAPA system at [http://spock.physast.uga.edu/](http://spock.physast.uga.edu/)

Other Student Resources

- If you cannot 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. In addition, I have an open door policy: if my office door is open, you are welcome to see me, for whatever reason.

- There is a Student Study Guide with Selected Solutions for this textbook that may be useful, although students have given this guide mixed reviews. Information on this and other resources is provided in your textbook.

- Tutors are available either through the [UGA Tutoring Program](http://spock.physast.uga.edu/) at Milledge Hall, or directly through the Department of Physics and Astronomy.

- We will have several help sessions during the week, where graduate students will work problems with you. These sessions are optional, but I strongly recommend them.
Grading Policy and Assignments

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

- 60% Three in-class exams (the best of the four exams taken, each counting 20%)
- 20% Laboratory grade
- 20% Homework grade

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

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<tr>
<th>Grade</th>
<th>Numerical Grade</th>
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<tbody>
<tr>
<td>A</td>
<td>90.0</td>
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<tr>
<td>A−</td>
<td>87.5</td>
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<tr>
<td>B+</td>
<td>85.0</td>
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<td>B</td>
<td>80.0</td>
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<tr>
<td>B−</td>
<td>78.5</td>
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<tr>
<td>C+</td>
<td>75.0</td>
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<td>C</td>
<td>70.0</td>
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<tr>
<td>C−</td>
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<td>D</td>
<td>60.0</td>
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<td>F</td>
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Overall numerical grades will not be rounded (i.e., 89.9 is still an A−).

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.

Exams

There will be 4 in-class exams, one administered at the day of the final exam. All exams will be closed-book and closed-notes. You may use a simple scientific calculator that is non-programmable, non-graphing, and non-symbolic. (Calculators such as the TI-83 or TI-84 are not allowed.) I’ll provide you with a formula sheet for each exam. The purpose of the formula sheet is to focus your studying on understanding rather than memorization. If you feel you need an equation that’s not on the sheet, don’t memorize it; learn how to derive it from the equations that are given.

Exams will comprise both conceptual and problem-solving questions, very 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.

There will be no make-up exams.

Homework

Regular, personal practice with physics problems is essential to understanding physics, so you will have weekly homework assignments. The assignments will generally be due every Tuesday and Friday, although class pacing and scheduling may necessitate different due dates,
which will be announced in class. Assignments will be posted online, and most problems will require you to submit your answers on the Web. However, some assignments may also have a handwritten component, which you should hand in to me directly or put into my mailbox in the main office, Room 201. (Do not slide anything under my office door.) Detailed solutions will be posted to the Web after the homework is due.

Each assignment will be weighted equally. Responses will be graded for correctness, although for some problems incorrect responses may earn partial credit for the effort. Problems that are to be handed in on paper must show all work legibly in order to receive credit.

Teamwork can be a very effective way to learn, so I encourage you to collaborate with your classmates on homework problems. That is in fact a goal of the optional weekly recitation sessions. However, don’t mistake teamwork for plagiarism; your solutions must be your own. Copying or paraphrasing from someone else’s work, or from any 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**

You are required to read the assigned textbook sections before the class in which those topics are discussed.

Regular reading is an important part of your preparation for class. Don’t expect to understand everything in the textbook at first sight! However, your learning effectiveness in class will depend on having encountered the material prior to class. You should jot down notes and questions as you read; this will aid in organizing your class notes and will remind you to ask for clarification.

**Extra Credit**

*There is no extra credit* in this course.

**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/ovpi/](http://www.uga.edu/ovpi/). 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. If you rather text or browse the web than listening to the lecture and interact in the classroom, please stay home.

• You’re responsible for all topics discussed in class, all class announcements, and all assigned textbook reading (even if some sections aren’t explicitly covered in class). Absence does not excuse you from this responsibility. While attendance is not strictly mandatory, your understanding of physics (and your grade) will suffer if you skip class. If your schedule makes it difficult to attend class regularly and on-time, you shouldn’t take this course.

• You are 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 leave it for the last minute, or 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 327.

• 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 concerning withdrawals and incompletes, published in the UGA Student Affairs website.