Physics 232: General Physics 2
Spring 2013

Professor:	Phone	Office	E-mail
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Class meetings: M W F 11:00 AM – 12:20 PM AHON 101

This class will not be a lecture course. Instead, we will discuss the reading due that day to discover together the high points. We will work on problems, experiments, and exercises during class time and discuss concepts. Class participation is **required**. Frequent unexcused absences and tardiness will result in grade reduction. If you will be absent from class for a valid reason (such as university approved events), you must inform me well in advance in order to have any opportunity to make up missed work and avoid missed points.

Texts:

Required:
From the series Six Ideas that Shaped Physics:
Unit E: Electric and Magnetic Fields are Unified 3rd edition (Draft), by Thomas A. Moore
Recommended:
Matter & Interactions II: Electric and Magnetic Interactions 2nd edition, by Ruth Chabay and Bruce Sherwood.
Any assigned reading ***must*** be read before class, and since I will not be lecturing, you should take notes while reading the book. Exercises are distributed throughout the chapters with the solutions at the end of each chapter. You are responsible for working out and understanding **all** example problems in each chapter.

Goals:

After completing this course, students will be able to

- Discuss scientific concepts as well as work out mathematical problems.
- Use homework not only as practice, but as a means of communicating information.
- Make approximations and idealizations in order to model complicated physical systems.
- Describe the small set of fundamental physical principles for electric and magnetic fields and interactions.
- Describe electromagnetic fields and how they behave.
- Calculate the fields from the charge distribution and vice versa.
- Use the fundamental principles to explain physical phenomena and to predict the behavior of a wide variety of physical systems.
- Describe how circuits and circuit elements behave.

Prerequisite – Physics 231
Corequisite – Math 122

Class Web site:

This syllabus is subject to change. The current, up-to-date version will be located on the class web site. http://newton.uor.edu/facultyfolder/julie_rathbun/phys232.html

Office hours: Th 10 AM - noon

You are encouraged to attend these office hours, even just to chat! You are also welcome to meet with me at any time which is mutually agreeable, even if it is not during my official office hours. I'm normally in the office M W Th F 9 AM – 5 PM and my class schedule (so you know when I'm busy) is posted on my web page. I will also answer questions over e-mail, please send a snapshot of the work you've already finished on a problem and I will help. Do not expect e-mails to be answered immediately! Especially late at night, during my research days, or on weekends. Your procrastination is not a reason for me to rush!

Homework:

Physics is not a spectator sport! You will not learn to solve problems without regular practice, so homework is an essential part of this course. There are 2 types of homework in this course:

- **Daily** - Since you will be responsible for reading the book on your own, problems will be assigned for every class period. These will demonstrate that you understand the basic concepts in the chapter. They are due at 11:00 am at the beginning of class and under no circumstances will late homework be accepted. Since these problems are for practice, they will be graded with a 0 (for poor effort including not attempting all problems), 1 (for a good effort, indicated with a ✓), or 2 (for a good effort with correct results and reasoning, indicated with a ✓+). Homework will be handed back during class and solutions will be made available. Corrections are due at the beginning of the next class and will be awarded an additional point if everything is suitably corrected and no points if major issues are uncorrected. Correcting your own homework is a valuable exercise that will help you understand the material better. You can expect to spend 2-3 hours per class on reading and daily homework.
- **Weekly** - More difficult problems will be collected once a week on Monday at 3 pm and again, no late homework will be accepted. These problems will be graded on a 3 point scale. You will receive a 0 for a poor effort (including not attempting all problems), a 1 (✓-) for a good effort to answer all assigned problems but some issues with presentation, a 2 (✓) for a good attempt at all problems and good presentation, and a 3 (✓+) for a completely correct assignment with excellent presentation. Excellent presentation includes clarity, with an assignment that is easy to follow, well organized, shows all logical steps, includes a diagram and definitions of all terms, includes units in calculations, does not include numbers until the last step, and includes an evaluation of the solution. If you received a ✓ initially, you can earn an extra point by correcting your homework. If you received a ✓- or 0, you can receive up to two additional points by turning in corrections. Corrections to the homework are due at the beginning of lab on Thursday. You can expect to spend 6-8 hours per week on weekly homework. You MUST begin this assignment early. You will **not** be able to complete it if you begin the night before it is due.

You are encouraged to work together with your classmates on the homework provided each person comes to an understanding of the questions and problems and submits a separate set of solutions. Copying another student's homework or allowing your homework to be copied is cheating and neither will be taken lightly. For the first offense, neither student's homework will get credit and a letter will be placed in both student files.

Laboratories:
Lab meets once per week on Thursdays 1:00 – 3:50 PM in AHON 101. The lab assignment will be posted to the class web page in advance and MUST be read before lab and MUST be brought to lab.

Laboratory Goals:
- Apply concepts learned in class to "real world" situations
- Get familiar with techniques used by practicing scientists
- Gain physical insight about topics covered in class

Laboratory Notebook:
Bring a bound quadrille-ruled laboratory notebook to the first laboratory. You will not be admitted to any laboratory without your notebook. The notebook will be collected at least once a week, usually Wednesday afternoons at 3 pm. At that time pre-lab questions for Thursday's lab will be graded. Failure to turn in the laboratory notebook on time with completed pre-lab questions will result in a zero for that lab activity. In addition,
- Each exercise should have introductory information: title, purpose, date, names of partners
- All entries must be in ink (no erasing, but crossing out is allowed)
- Notebooks MUST stand on their own and be understandable
- All pre-lab and post-lab questions must be answered
- All data taken must be included along with any requested analysis
- If any work is done outside of the notebook (plots, etc.) they must be stapled to their own page in the book

Exams:
The **final exam** will be **Tuesday, April 16th at 3 pm**, note that this is the exam scheduled for the lab time. There will also be two midterm exams given during lab. They are tentatively scheduled for February 7th and March 14th. Exams will be closed book, cumulative, and contain both conceptual and quantitative problems. A list of equations will be provided. You may use a calculator for basic functions (addition, subtraction, multiplication, division, powers, exponentials, logarithms). You are on your honor not to use a calculator for advanced functions (including integration, differentiation, solving equations, unit conversions) or to store formulas or notes of any type in its memory. Calculators may not be shared.

Grading:
Final grades will be based on the following:

Labs	20%
Homework	25%
Attendance and Participation	10%
Exams	45%

Other notes:

Outside of class activities

- **REQIUIRED – Physics Senior Symposium** – Thursday, March 28th 4pm-5:30pm You must attend **and** ask questions. If this date is a problem, you MUST contact the instructor by January 25th to avoid losing a letter grade.

Tips for success in this class:

- Talk to your instructor, she is here to help.
- Come to office hours. This course is more difficult than Physics 231. In order to get the same grade, you will likely have to work harder. It is intended that you will have questions and that you will come to office hours to get them answered. I can also help with things other than homework, suggestions on studying, advice on research, etc. Further, I strongly encourage you to work in a group in the study area outside my office so that I may help you if you encounter any difficulties.
- Do all reading in advance.
- Work on problems in a group. We will do lots of problems in class as group problems and you will notice how easy it is to make small errors and how working in a group will allow these mistakes to be corrected by others.
- Work on physics everyday. For example, the following schedule will work well:

Tuesday	Wednesday	Thursday	Friday	Weekend	Monday
Do reading and daily problems for tomorrow's class.	Turn in pre-lab and work on weekly hw problems for today's class	Go to office hours for any questions, and do reading and daily hw for tomorrow.	Finish lab, work on weekly hw problems for today's class.	Finish weekly homework and corrections and do reading and problems for Monday's class	Ask Julie any last minute questions on weekly hw and turn in.

- Make corrections to your homework.
- Talk in class, ask questions, make explanations, and join in discussions