Instructor

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Office Hours: posted on-line at http://www.oberlin.edu/physics/Scofield/hours.htm

Note: Future course materials (with the possible exception of exams and quizzes) will generally not be made available on paper but, instead, will be distributed via the world wide web at http://www.oberlin.edu/physics/Scofield/p311/.

Course Description

Of the four forces in nature, the electromagnetic force is the one with the most practical and immediate importance. Virtually all of biology, chemistry, and engineering deals with the consequences of the electromagnetic force.

This course, like PHYS-111, deals entirely with the topic of electricity and magnetism. The main way in which this course differs from PHYS-111 is in its level of mathematical sophistication. Many of you were taking your third semester of calculus (multivariate) at the same time that you took PHYS-111. Since then most of you have become adept at your use of multivariate calculus, have learned to solve ordinary differential equations, and have been introduced to several classes of “special functions.” This semester we will apply all of these mathematical tools to our study Electricity and Magnetism.

Textbook

The textbook for this course is David J. Griffiths, Introduction to Electrodynamics, 3rd edition (Prentice-Hall, New York, 1999). Additional reading and supplemental materials will be placed on reserve in the Oberlin College Science Library.

Lectures

Regular classes meet from 9:00-9:50 a. m. each Monday, Wednesday and Friday in the Wright first floor classroom. Regular class periods will normally be used for lectures; two midterm exams may also be administered during the regular class sessions. You are required to attend all regular classes -- unexcused absences will negatively impact your course grade. Please be prompt. In turn, I will strive to end lectures at 9:50 sharp!

Homework

Weekly reading and homework assignments will be distributed, usually through the course web site. The assignments will normally be distributed at the beginning of each Friday lecture and your solutions will be due one week later. Homework must be turned in directly to me, not to the grader. Homework will not be accepted after the solutions have been made available.
Honor Code

Working with other classmates on homework is not only allowed, it is strongly encouraged! However, any work you turn in must be written up by you, in your own words, and must reflect your own understanding of the material. In contrast, collaboration on exams is not permitted. And, under no circumstances is it acceptable to represent someone else's work as your own.

Under no circumstances are you allowed to make use of homework or exam solutions distributed in previous years nor are you to make available solutions distributed this year to anyone outside of this class. And, of course, it is not acceptable to make use of solutions you might find through some alternate means – for instance, posted on the web for a course at another institution.

Solutions to homework assignments will be made available to you after the due date for your personal use only. Homework problems and exam questions may be recycled year to year. You are not allowed to consult or otherwise make use of exams administered in previous offerings of this course, except as explicitly made available this semester to the entire class by the instructor – doing so is a violation of the honor code. And it should be obvious that you are not allowed to consult my solutions before you have turned your own work in.

Remember that you must write the honor pledge, “I have adhered to the honor code on this assignment” on all of your written work – including homework assignments. You will receive no credit for work turned in without this declaration.

Problem Session

We will arrange for one additional class period that will be devoted to questions about the homework. While this session is considered optional, I strongly advise you all to participate regularly. It is amazing how much additional learning and teaching takes place in this homework session. This problem session will be arranged based on the information I receive from you regarding your individual schedules.

Exams

There will be two midterm exams administered in this course. The first exam is scheduled for Mar. 9 and the second for April 20. Exams will either be given during these class periods or, if of the take-home variety, will be due at the beginning class on these days. The final exam time is set by the Registrar. For your information it appears to be scheduled for Thursday, May 17, at 9 AM.

If you are not able to take the exams at the scheduled times you must discuss this with the instructor during the first week of class. This applies to anyone requiring extra time on exams (e.g., due to a learning disability) or a conflict due to a prior commitment. Any emergency conflict should be brought immediately to the instructor’s attention (death in the family, etc.).
Grades

Roughly speaking, your course grade will be determined as follows: 40% homework and 50% exam. The final 10% will be associated with class participation.

Topics

This course will mostly cover Chapters 1 – 7 of Griffiths. With luck this will leave a week or two to visit some selected topics in Chapters 8 and 9. The material to be covered includes:

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