

**PHYS 5300**  
**Applied Electrodynamics**  
**Fall 2014**

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**Schedule:** TR 11:00--12:20pm

**Office Hours:** TBA

**Course Text:** We will draw on a number of texts. We will use

*Introduction to Electrodynamics (3<sup>rd</sup> Edition)*, David J. Griffiths, Addison Wesley; 3rd edition (January 9, 1999), ISBN-10: 013805326X, ISBN-13: 978-0138053260.

and draw on similar and higher level texts, such as

*Electricity and Magnetism*, Edward M. Purcell and David A. Morin, Cambridge University Press; 3 edition (January 21, 2013), ISBN-10: 1107014026, ISBN-13: 978-1107014022.

*Electromagnetic Fields, 2nd Edition*, Roald K. Wangsness, Wiley; 2nd edition (July 24, 1986), ISBN-10: 0471811866, ISBN-13: 978-0471811862.

And, of course,

*Classical Electrodynamics, Third Edition*, John David Jackson, Wiley; 3rd edition (August 10, 1998), ISBN-10: 047130932X, ISBN-13: 978-0471309321.

Don't go running out and buying all of these. We will discuss this in class. You will just need one that is most readable to you.

**Course Coverage:** Vector Analysis, Electrostatics, Special Techniques, Electrostatic fields in matter, Magnetostatics, Magnetic fields in matter, Electrodynamics, Conservation Laws.

**The Nature of the Course:** The course will be taught interactively. You will be asked to read ahead and be prepared to present or discuss the reading in class. We will focus both on conceptual and quantitative aspects of the material. You will work on problem--solving during class and be required to explain your reasoning, as well as to solve computational problems. When solving problems, the process by which you solve a problem will be more important than the final answer and you will be graded on your problem--solving process on homework, quizzes and exams.

**Expected Learning Outcomes:**

Students should be able to demonstrate their understanding of the material covered by their ability to solve problems and answer questions on the content covered. They should

be able to demonstrate an understanding of the development, use and predictive power of quantum mechanics that is consistent with experimental evidence.

**Methods for Assessing Expected Learning Outcomes:**

Learning outcomes will be assessed through quiz, homework and exam problems that require students to show their calculation and explain their reasoning and in--class discussions with their peers.

**Participation:** As the class will be taught interactively, class participation is required. This includes reading ahead, solving problems and being prepared to discuss in class when asked. There may be pre--tests, post--tests and surveys given during class. These may not be graded, but counted as part of your participation grade. You will receive full credit, if you do them and lose participation points, if you don't. Class participation will count as 20% of your grade.

**Homework:** Homework problems will be assigned periodically. They will be graded and count as 30% of your grade.

**Exams:** There will be a two midterm exams. Midterm exams will count as 30% of your grade.

**Final Exam.** The final exam will count as 20% of your grade. **Grades:** The grade will be weighted as follows:

Participation 20% Homework 30% Midterm Exams 30% Final Exam 20%

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office in 335 West Hall or 806--742--2405.