PHYSICS 3323

ELECTROMAGNETISM I

SPRING 2003

- **Instructor:** Prof. David Reitze
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- **Class Meeting Time and Place:** MWF 4th Period (10:40 am - 11:30 am), NPB 1002

- **Office Hours:** TBA depending on class preference

- **Textbook:** D. J. Griffiths, *Introduction to Electrodynamics,* 3rd edition, Prentice Hall 1999 – Note that Griffiths maintains a web site containing errata for the textbook at http://academic.reed.edu/physics/faculty/griffiths.html . Look at the bottom of the page for corrections to different printings.
  - Supplemental Text: P. Lorrain, D. R. Corson, and F. Lorrain, *Electromagnetic Fields and Waves,* W. H. Freeman and Company, 1988

- **Course Description:** This is the first semester of a two-semester sequence in electrodynamics. In this semester, we will learn about the physics of static electric and magnetic fields. Along the way, we will pick up some mathematical techniques (gradients, curls, line integrals, and surface integrals to name a few) useful for calculating electric and magnetic fields. During the course, you will (hopefully) develop fluency in the requisite mathematical techniques and an understanding of the physical nature of the sources and nature of electric and magnetic fields. While this course requires a substantial amount of quantitative computation, I hope to be able to emphasize the physical (as opposed to the mathematical) nature of the EM fields. It is important not to loose sight of the physics when doing physics! In addition, we will undertake some simple MatLab exercises to get you familiar with the fun and power of doing numerical physics.

- **Prerequisites:** Differential equations (MAP2302). One year of calculus-based physics (at the level of PHY2048, 2049). It is also very useful to have had vector calculus (MAC2313) or to be concurrently registered.

- **Required Work:**
  - Homework - your success in this course is directly proportional to the amount of time you spend on solving the homework problems outside of class, be it on your

own or with a group of other students. Problem sets will be due every two weeks at the beginning of class. Homework will be graded on a 10 point scale and will count for 30% of your total grade. It is very important that you attempt to do all the problems; partial credit is one of the keys to success in this course.
Late Homework - Homework turned in after the due date will be graded down accordingly: a loss of 3 points for the first *day* and a loss of 2 points for each additional *week*.

- Tests - There will be two midterms and a final examination

Test 1	Friday, February 7	In Class
Test 2	Wednesday, March 19	In Class
Final Exam	Monday, April 29, 7:30 am	Venue TBA

You are allowed to bring a calculator and one 8 1/2" x 11" formula sheet to the exams (two sheets for the final exam). If you must miss the exam because of a valid reason, you must provide written proof.

- **Grades:** Your grade will be calculated as follows:

Test 1	**20%**
Test 2	**20%**
Final Exam	**30%**
Homework	**30%**

Final letter grades will be assigned based on the distribution of grades at the end of class. Based on prior experience, grades will be given roughly as follows:

Score	Grade
95	A+
85	A
80	B+
70	B
60	C+
50	C
45	D+
< 45	D