

**PHY 4324-U01: Intermediate Electromagnetism II**  
**Spring 2015**

**Instructor:** Dr. Rob Laird  
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**Office:** CP 223  
**Phone:** (305) 348-6264

**Lectures:** MWF 9:00 – 9:50 a.m. in CP 115

**Office hours:** MW 10:00 – 11:00 a.m., TuTh 1 – 3 p.m., and whenever my office door is open!  
You are **strongly encouraged** to stop by if you have any questions or need assistance.

**Course Description:** The theory of electromagnetic fields and waves is developed from basic principles. Vector calculus, Coulomb's law, Gauss's Law, electrostatic potential, dielectrics, solutions to Laplace's and Poisson's equations, magnetic induction, vector potential, magnetic materials, Maxwell's equations, and propagation of waves in space and various media are discussed.

**Prerequisites:** PHY 4323.

**Textbook:** *Introduction to Electrodynamics*, 4<sup>th</sup> Ed., by David J. Griffiths (ISBN: 978-0321856562)

**Tools:** You will be doing a lot of mathematics in this class so you will need a good math handbook. The *Mathematical Handbook of Formulas and Tables*, Schaum's Outline Series (ISBN: 978-0070382039), is an excellent choice.

**Course Objectives:** We will cover selected topics from Chapters 4 - 11 of the text. Specifically, we will study electric and magnetic fields in matter, electrodynamics, conservation laws, electromagnetic waves, and radiation.

**Learning Outcomes:** Student successfully completing this course will demonstrate knowledge of the core principles of electrodynamics and be capable of effectively applying this knowledge and mathematics to solve electrodynamics physics problems.

**Course Work:**

- 1) **Homework Assignments** – This is a very important aspect of this course. You must acquire the skills to do physics and the best way to accomplish this is to work a lot of problems. Homework will be assigned regularly and will consist of questions, exercises, and problems from the textbook. If you have any trouble, please come see me at anytime. You are strongly encouraged to discuss homework problems with others. However, copying from other students is unacceptable.
- 2) **Exams** – There will be two exams. Exams will cover material from the lectures, readings, and homework assignments.
- 3) **Final Exam** – A final exam will be given at 7:30 a.m. on Friday, May 1, 2015.

**Grading:** The course grade will be determined from homework assignments (20%), two exams (2 x 25% = 50%), and the final exam (30%).

**Grading Scale:**

A (93 – 100)	B+ (87 – 89)	C+ (77 – 79)	D+ (67 – 69)
A- (90 – 92)	B (83 – 86)	C (73 – 76)	D (60 – 66)
	B- (80 – 82)	C- (70 – 72)	F (< 60)

**Attendance Policy:** Students are expected to attend every class. Students will be allowed to make-up work only if they can present written evidence (from a doctor or recognized university authority) that their absence was unavoidable.

**Student Conduct:** All students are expected to follow the rules outlined in the Florida International University Student Handbook. As a courtesy to your classmates and the professor, please turn off your cell phone and your laptop.

**Academic Honesty and Plagiarism:** Students must not cheat or plagiarize, and they must not condone these behaviors nor assist others who cheat or plagiarize. Academic misconduct not only jeopardizes the career of individual student involved, but it also undermines the scholastic achievements of all students and attacks the mission of this institution. Students are responsible for doing their own work, thereby insuring the integrity of their academic records. A complete description of this policy is listed in the Florida International University Student Handbook.

**Students with Disabilities:** Florida International University seeks to provide equal access to its programs, services, and activities for people with disabilities. Any student who feels he/she may need an accommodation based on the impact of a disability should contact the University's Disability Resource Center to discuss your specific needs. The DRC is located in GC 190 and can be contacted by phone (305-348-3532) or by email (drcupgl.fiu.edu). Accommodations can then be made with reasonable prior notice to your professor.

**Disclaimer:** The instructor reserves the right to modify this syllabus and the policies outlined within it.

### Tentative Schedule

Dates	Topics Covered
Jan 12 – 16	Chapter 5: Magnetostatics
Jan 19 – 23	Chapter 5: Magnetostatics
Jan 26 – 30	Chapter 5: Magnetostatics
Feb 2 – 6	Chapter 6: Magnetic Fields in Matter
Feb 9 – 13	Chapter 6: Magnetic Fields in Matter
Feb 16 – 20	Chapter 7: Electrodynamics
Feb 23 – 27	Chapter 7: Electrodynamics <b>Exam 1</b>
Mar 2 – 8	Chapter 7: Electrodynamics
Mar 9 – 13	Spring Break
Mar 16 – 20	Chapter 8: Conservation Laws
Mar 23 – 29	Chapter 8: Conservation Laws Chapter 9: Electromagnetic Waves
Mar 30 – Apr 3	Chapter 9: Electromagnetic Waves
Apr 6 – 10	Chapter 9: Electromagnetic Waves <b>Exam 2</b>
Apr 13 – 17	Chapter 10: Potential and Fields
Apr 20 - 24	Chapter 11: Radiation
Apr 27 – May 1	<b>Final Exam</b> (7:30 – 9:30 a.m. on Friday, May 1)