Physics 302

Electromagnetic Waves
Spring Semester 2015

Room:	Seaver Hall 109
Time:	**MW 1:00 - 2:15 pm**
Instructor:	Dr. Gabriele Varieschi
Office:	Seaver Hall - 110
Phone:	(310) 338-7632
E-mail:	gvarieschi@lmu.edu
Office hours:	Mon., Wed. 10:00 am – 11:30 am; and by appointment.
Web page:	http://myweb.lmu.edu/gvarieschi/
Required Text:	**David J. Griffiths – Introduction to Electrodynamics – Fourth Edition – Prentice Hall** (we will try to finish the book during the second semester).
Other useful books:	Serway – Physics for Scientists and Engineers, Vol.2 – Thomson (for an elementary introduction to electromagnetism).
(not required)	Reitz, Milford & Christy – Foundations of Electromagnetic Theory – Addison Wesley (another popular undergraduate text). John D. Jackson – Classical Electrodynamics – Wiley (a leading graduate level textbook).
Objectives and Topics:	We will cover several chapters of the textbook in the following order: Part I – Magnetostatics in vacuum: magnetic field and forces, Biot-Savart law, Ampere's law and magnetic potential. Part II – Magnetic fields in matter. Magnetization and linear media. Electrodynamics: electromotive forces, electromagnetic induction, Faraday's law. Maxwell's equations. Part III – Special relativity. Lorentz transformations and tensor notation. Electrodynamics in tensor notation. **Prerequisite: PHYS 301.**
Learning Outcomes:	Understand the foundations of classical electromagnetism from a more advanced point of view. Conceptually understand the theoretical framework of electromagnetic fields and related Maxwell equations. Be able to solve problems of increasing complexity, dealing with the applications of elecromagnetism.
Tests:	There will be two/three tests during the semester. They will all count toward your final grade, so please try not to miss any of them.
Test Dates:	TBA
Final Exam:	**Thursday, May 7, 2:00-4:00pm, or a take-home-exam**.
Homework:	Homework assignments will be given, typically one for each chapter of the book. Problem sets will be collected, graded, and will count toward the final grade. Solutions to the problems will be reviewed in class, with student participation.

Grading:
(tentative)

Class Attendance & Participation	10 %
Homework	15 %
Test 1	15 %
Test 2	15 %
Test 3	15 %
Final Exam	30 %

Grading (approx.): <50%=F; 50-54%=D; 55-69%=C range; 70-84=B range; >84=A range.

Academic Honesty: Academic dishonesty will be treated as an extremely serious matter, with serious consequences that can range from receiving no credit for assignments/tests to expulsion. It is never permissible to turn in any work that has been copied from another student or copied from a source without properly acknowledging the source. It is your responsibility to make sure that your work meets the standard of academic honesty set forth in the "LMU Honor Code and Process" in the Undergraduate Bulletin.

Syllabus changes: If necessary, this syllabus and its contents are subject to revision; students are responsible for any changes or modifications announced in class.

Have a good semester. Good luck !