Physics 110A Syllabus

Electricity and Magnetism

(Physics 110A: CRN 46680)

Description: Lecture—3 hours; extensive problem solving. Prerequisite: courses 9B, 9C, 9D and Mathematics 21D, 22A, and 22B passed with grade C– or better, or consent of department; prerequisite for 110B is courses 110A and 104A passed with a grade of C– or better or consent of department; prerequisite for course 110C is courses 110B and 104B passed with a grade of C– or better, or consent of department. Theory of electrostatics, electromagnetism, Maxwell's equations, electromagnetic waves.

Instructor: Professor Nicholas Curro
curro@physics.ucdavis.edu
Office - Room 201; Office Hours on Mon 11-12 pm or by appointment

Lecture Time: MWF 10:00-10:50am, Winter Quarter 2012

Location: Roessler 55

Textbook(s): Introduction to Electrondymanics, by David Griffiths

Website: All materials and latest information will be available on Smartsite, including a discussion board. Please take advantage of these resources!

Graders: Toni Stone **Office Hours**: Thursday 4-5pm **Location**: 168 Roessler
Rion Graham **Office Hours**: Wednesday 1-2pm **Location**: 221 Physics

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Homework (15%): There will be ten homework assignments. Each assignment will be approximately 5-10 problems from the textbook, and will be due in class on Mondays.

Quizzes (20%): There will be weekly quizzes on Mondays for the first 15 minutes of lecture.

Exams (Two Midterms 15% each, and Final Exam 30%): Basic scientific calculators are required and integrals and constants will be provided, but no physics formula will be given. The midterms will be given during a class period. The final exam is 2 hours and is comprehensive, covering all of the material in the course. No makeups are available on the midterms. If you have an excused absence from a midterm, the grading will be arranged to weight the remaining midterm and the final examination more heavily. The final exam will take place on Wednesday March 21st from 1:00 pm -3:00 pm in Roessler 55. Cheating will not be tolerated in any form, and the matter will be submitted to the Student Judicial Affairs. Regrades on the midterms will be allowed, but will cost you 10 points except in extreme cases of misgrading. Regrades must be requested within one week of getting the graded exams back.

Lecture Etiquette: Turn your cell phones off. No texting/phone calls/gaming will be tolerated, or any private conversations. Lecture time is a precious resource that you and your colleagues are paying for, so please respect one another!

Podcasting: The lectures will be recorded and will be available as Podcasts on the Smartsite. This is not intended to be a substitute for attending lecture, but hopefully will complement your notes as another study material.

Course Schedule:

Date	Material	Reading
Monday, January 09, 2012	**No Class**	Appendix C
Wednesday, January 11, 2012	Vector Algebra	Chapter 1.1
Friday, January 13, 2012	Vector Calculus	Chapter 1.2-1.3
Monday, January 16, 2012	**No Class - Martin Luther King Holiday**	Appendix A, B
Wednesday, January 18, 2012	Curvilinear Coordinates	1.4
Friday, January 20, 2012	Dirac Delta Function	1.5
Monday, January 23, 2012	Vector Fields	1.6
Wednesday, January 25, 2012	Electrostatic Fields	2.1
Friday, January 27, 2012	Divergence and Curl of Electric fields	2.2
Monday, January 30, 2012	Electric Potential	2.3
Wednesday, February 01, 2012	**Midterm 1**	review
Friday, February 03, 2012	Work and Energy in Electrostatics	2.4
Monday, February 06, 2012	Conductors	2.5.1-2.5.2
Wednesday, February 08, 2012	Surface charges and forces	2.5.3
Friday, February 10, 2012	Capacitors	2.5.4
Monday, February 13, 2012	Laplace's Equation	3.1
Wednesday, February 15, 2012	Method of Images	3.2
Friday, February 17, 2012	Separation of Variables in Cartesian Coordinates	3.3.1
Monday, February 20, 2012	**No Class - Presidents Day**	review
Wednesday, February 22, 2012	Separation of Variables in Spherical Coordinates	3.3.2
Friday, February 24, 2012	Multipole Expansion	3.4.1-3.4.3
Monday, February 27, 2012	Electric dipoles	3.4.4
Wednesday, February 29, 2012	**Midterm 2**	review
Friday, March 02, 2012	Dielectrics	4.1.1-4.1.2
Monday, March 05, 2012	Polarization	4.1.3-4.4.4
Wednesday, March 07, 2012	Bound charges	4.2.1-4.2.2
Friday, March 09, 2012	Fields in Dielectrics	4.2.3
Monday, March 12, 2012	Electric Displacement	4.3
Wednesday, March 14, 2012	Susceptibility and Permittivity	4.4.1-4.4.3
Friday, March 16, 2012	Energy in dielectrics	4.4.4-4.4.5
Monday, March 19, 2012	Polarizability and Susceptibility	review
Wednesday, March 21, 2012	**Final Exam Roessler 55 1:00-3:00 PM**	