Introduction to Electricity and Magnetism

PHYS 1304/1404 (Spring 2005) Syllabus

http://www.physics.smu.edu/~kehoe/1304

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Texts: *"Physics for Scientists and Engineers"*, Vol 2, 6th edition,
Authors: Serway & Jewett
Prerequisite: facility with algebra and trigonometry, limited use of calculus
Class Time: Tue & Thur 9:30a.m – 10:50a.m.
Classroom: Rm 119 Fondren Science
Office hours: 11am-1pm Tuesday, or by appointment

Course Objectives: To provide an overview of electromagnetism. Students will familiarize themselves with electrical, magnetic and optical phenomena. They will also study important electronics concepts. Modern applications will be discussed. Problem solving skill development will also be an emphasis of the class.

Method of Instruction: The class will consist primarily of lectures. Help sessions will be available Mondays from 5pm to 6pm, Rm 25 of Fondren Science. They will be conducted by Anna Stelzenmuller. Please bring a scientific calculator (i.e. it has trigonometric, log, exponential and root functions) to each class. Homework is the foundation of your effort to acquire skill in using the material in the course. It will be due most non-test lecture days and will be worth 5% of the course grade. Solutions will be posted on the course web-site.

Quizzes and Tests: There will be 3 primary tests during the semester, including the final exam. Tests will make up 65% of the class grade: 20% each for the first 2 exams, 25% for the final. The second test covers material since the first test. The final is cumulative over the whole course. There will be seven 15 minute quizzes during the semester scheduled at the beginning of designated lecture periods. These will provide a total of 30% of your grade. Each quiz covers material since the last test or quiz. Tests and quizzes are closed book. You may bring a single 8.5"x11" sheet with important formulas and constants relevant for the material on each test and quiz.

Grading and Attendance Policy: In general, it is crucial to show your work to get credit for solutions to homework, quiz or test problems. Regrading requests must be well-justified in writing, and as delineated on the course web-page. Anticipated absences resulting from religious observance or officially sanctioned extracurricular activity must be brought to the instructor's attention at least 2 weeks in advance. Affected quizzes or tests will be given prior to the rest of the class. No other make-up quizzes or tests will be granted. No late homework will be accepted.

Physics 1304/1404 Schedule, Spring 2005

Date	Topic	Read to:	Problems:
Jan13 Th	Introduction, Electric Charge	Ch 23.4	---
Jan 18 T	Electric Field	Ch 23.7	Ch 23: 7,8,9,14,15,20
Jan 20 Th	Gauss's Law	Ch 24	Ch 23: 30,35,42
Jan 25 T	Electric Potential,	Ch 25	Ch 24: 1,10,19,23,39
Jan 27 Th	Capacitance, Quiz#1	Ch 26	Ch 25: 3,6,18,22,37,48
Feb 1 T	Current and Resistance	Ch 27.2	Ch 26: 1,2,16,17,21,44
Feb 3 Th	Ohm's Law,	Ch 27.6	Ch 27: 6,13,14,17,21,22,24
Feb 8 T	Circuits, Quiz #2	Ch 28.2	Ch 27: 28,34,35
Feb 10 Th	Direct Currents	Ch 28.4	Ch 28: 1,2,6,7,11,15,21,25,26
Feb 15 T	Applications	Ch 28.6	Ch 28: 29,30,31,33,36,48
Feb 17 Th	Test #1	---	---
Feb 22 T	Magnetic Fields	Ch 29	---
Feb 24 Th	Magnetic Field Sources	Ch 30	Ch 29: 1,3,8,11,13,21
Mar 1 T	Faraday's Law, Quiz #3	Ch 31.5	Ch 30: 1,7,16,23
Mar 3 Th	Maxwell's Equations	Ch 31.7	Ch 31: 1,3,5,10,13,20,36
Mar 8 T	Inductance	Ch 32.3	Ch 31: 44,45
Mar 10 Th	Oscillations, Quiz #4	Ch 32.6	Ch 32: 1,3,12,14,15,29,31
Mar 15 T	Spring Break	---	---
Mar 17 Th	Spring Break	---	---
Mar 22 T	Alternating Currents	Ch 33.7	Ch 32: 46,48,50,51,52
Mar 24 Th	Transformers	Ch 33.9	Ch 33: 2,6,8,14,44
Mar 29 T	Test #2	---	---
Mar 31 Th	Waves	---	---
Apr 5 T	Electromagnetic Waves	Ch 34	---
Apr 7 Th	Optics, Quiz #5	Ch 35	Ch 34: 2,3,11,26
Apr 12 T	Geometric Optics	Ch 36	Ch 35: 8,10,12,13,21,25,36
Apr 14 T	Interference	Ch 37	Ch 36: 3,7,11,28,30,33
Apr 19 T	Diffraction, Polarization	Ch 38	Ch 37: 1,2,7,32,34
Apr 21 Th	Relativity, Quiz #6	Ch 39	Ch 38: 4,11,20
Apr 26 T	Quantum Mechanics	Ch 40	Ch 39: 5,6,7,10
Apr 28 Th	Subatomic Physics, Quiz #7	Ch 44,46	Ch 40: 6,35
May 6 F	Final Exam 3pm-6pm	---	---