PHYS 1442
UNIVERSITY PHYSICS 2
Fall 2009

Lecture 10:00am-10:50am MWF LSC 114
LAB 2:40pm-5:20pm T
http://faculty.uca.edu/saustin/1442/1442_f09.html

Instructor

Scott Austin
LSC 012 450-5907 saustin@uca.edu
Office hours: M W F 9am-10am, MWF 11am-12pm

Course Description

Part of the major core. Continuation of PHYS 1441. Introduction to waves, electromagnetism. Lecture and laboratory. PHYS 1441. Pre- or co-requisite: MATH 1592.

Goals/Objectives

- A fundamental understanding of the physics of electricity and magnetism.
- Mastering applying calculus and vector calculus to electricity and magnetism problems.
- Further experience with laboratory methods, analysis, and report writing.
- Preparation for PHYS 3360 Electromagnetism

Required Equipment

- Text book: Knight, "Physics for Scientists and Engineers with Modern Physics" 2nd Edition
- Calculator
- Hard-bound book with quadrille-ruled paper and sewn-in pages

Reading and Online Lectures

Do the assigned reading and watch the MIT lectures as listed on the attached schedule before coming to class.

Classroom Activities

Class time will be spent on presentations, demonstrations, discussions, and problem solving sessions.

Laboratory Exercises

Lab work will be done during Tuesdays lab block. You must use a hard-bound book with quadrille-ruled paper and sewn-in pages. These are inexpensive and readily available at the bookstores and office supply stores. You should always bring the notebook to lab, along with writing utensils, a calculator, and your textbook. You should record all data, calculations, and answers to questions in your lab notebook. Two unexcused lab absences will result in an automatic grade of F for the semester. Lab assessment will be some combination of lab reports and quizzes and can only get credit for these if you have attended lab.

Problem Sets and Quizzes
Weekly problem sets. A subset of the assigned problems will be for graded. Quizzes will be given at random times during class. Problem set and quiz solutions will be graded on the basis of whether the solutions proves the result gotten. In other words, work must be shown and make a logical and complete argument.

Exams
Four exams are scheduled during the semester.

Final Exam
The final exam is comprehensive.

Grading and Grades
- 20% Problem Sets & Quizzes+25% Labs+35% Exams+20% Final Exam

Starting Grade Scale
$90\% \leq A \leq 100\%$
$80\% \leq B < 90\%$
$70\% \leq C < 80\%$
$60\% \leq D < 70\%$
$0\% \leq F < 60\%$

Phones and PDAs
Sending or receiving messages with phones or other devices during class or lab will result in the loss of points equivalent to one lab quiz for each infraction.

Using phones as calculators is prohibited.

Having a phone on or visible during an exam or quiz will result in an automatic F for the exam or quiz.

Absences
All labs, quizzes, and exams must be done during the scheduled times.
Consideration will be given for the following at the convenience of the instructor:

- Any student who is required to participate in off-campus, university-sponsored activities such as field trips, musical performances, judging teams, intercollegiate athletic events, etc. must obtain a letter from the faculty or staff member supervising the off-campus activity. The letter must contain specific information concerning the activity and date, be signed by the supervising faculty or staff member, and be submitted by the student to me at least one week in advance.
- Students that must miss a class because of illness, personal crises, mandated court appearances, parental responsibilities, and the like are required to submit a written explanation of the absence at least one week in advance. For emergency situations, students are required to call or e-mail me immediately followed by a written explanation.
- If one cannot come to class because of inclement weather one must call or e-mail me immediately.
- Students who attempt to gain advantage through abuse of this policy (e.g., by providing an instructor with false information) will receive disciplinary action and will fail this course.

Academic Misconduct

Academic misconduct include cheating, falsification, multiple submission, plagiarism, abuse of academic materials, and complicity or misconduct in research; the definition of academic misconduct is stated in the Student Handbook. Any student guilty of an act of academic misconduct will be subjected to one or more of the following penalties as outlined in the Student Handbook: 1. The students' grade in the course or on the examination or assignment affected by the misconduct may be reduced to an extent, including reduction to failure. 2. The student may be placed on probation or suspended from the university for a specific period of time. 3. The student may be expelled from the university. Expect to receive the maximum penalty for any academic misconduct.

Misc Policies

All other policies not explicitly covered in the syllabus can be found in the Student Handbook. For example, academic policies in general can be found beginning on page 26 and the sexual harassment policy can be found on page 93.

Americans with Disabilities Act

UCA adheres to the requirements of the Americans with Disabilities Act. If you need accommodation under this Act contact the UCA Office of Disability Services at 450-3135.

Schedule Fall 2009

	Month	Day	Subject/Event	Chapter & MIT Lecture
F	Aug	21	Syllabus and Pre-course evaluations	
M	Aug	24	Electric Charges and Forces	26 & 01
T	Aug	25	**Lab:** Coulomb's Law	
W	Aug	26	Electric Charges and Forces	26 & 01
F	Aug	28	Electric Charges and Forces	27 & 02
M	Aug	31	The Electric Field	27 & 02
T	Sep	1	**Lab:** Electric Fields of Charges	
W	Sep	2	The Electric Field	27 & 02
F	Sep	4	The Electric Field	27 & 02
M	Sep	7	Labor Day	
T	Sep	8	**Lab:** Electric Potentials	
W	Sep	9	Gauss's Law	28 & 03
F	Sep	11	Gauss's Law	28 & 03
M	Sep	14	Gauss's Law	28 & 03
T	Sep	15	**Exam 1**	26, 27, 28
W	Sep	16	Gauss's Law	28 & 03
F	Sep	18	Gauss's Law	28 & 03
M	Sep	21	Electric Potential	29 & 04
T	Sep	22	**Lab:** Resistivity & Ohm's Law	
W	Sep	23	Electric Potential	29 & 04
F	Sep	25	Electric Potential	29 & 05

	Month	Day	Subject/Event	Chapter & MIT Lecture
M	Sep	28	Potential and Field	30 & 07
T	Sep	29	**Lab:** Kirchhoff's Laws & RC Circuits	
W	Sep	30	Potential and Field	30 & 07
F	Oct	2	Potential and Field	30 & 08
M	Oct	5	Current and Resistance	31 & 09
T	Oct	6	**Lab:** Oscilloscope	
W	Oct	7	Current and Resistance	31 & 09
F	Oct	9	Current and Resistance	31 & 09
M	Oct	12	Fundamentals of Circuits	32 & 10
T	Oct	13	**Exam 2**	28, 29, 30, 31
W	Oct	14	Fundamentals of Circuits	32 & 10
F	Oct	16	**Fall Break**	
M	Oct	19	Fundamentals of Circuits	32 & 10
T	Oct	20	**Lab:** Current Balance	
W	Oct	21	Magnetic Field	33 & 11
F	Oct	23	Magnetic Field	33 & 13
M	Oct	26	Magnetic Field	33 & 14
T	Oct	27	**Lab:** Faraday's Law	
W	Oct	28	Magnetic Field	33 & 15
F	Oct	30	Magnetic Field	33 & 15
M	Nov	2	Electromagnetic Induction	34 & 16
T	Nov	3	**Exam 3**	32,33, 34
W	Nov	4	Electromagnetic Induction	34 & 17

	Month	Day	Subject/Event	Chapter & MIT Lecture
F	Nov	6	Electromagnetic Induction	34 & 20
M	Nov	9	Electromagnetic Fields and Waves	35 & 18
T	Nov	10	**Lab:** Magnetic Induction	
W	Nov	11	Electromagnetic Fields and Waves	35 & 22
F	Nov	13	Electromagnetic Fields and Waves	35 & 26
M	Nov	16	Electromagnetic Fields and Waves	35 & 27
T	Nov	17	**Lab:** AC Filter Circuits	
W	Nov	18	Electromagnetic Fields and Waves	35 & 28
F	Nov	20	AC Circuits	36 & 24
M	Nov	23	AC Circuits	36 & 24
T	Nov	24	**Exam 4**	34, 35
W	Nov	25	AC Circuits	36 & 24
F	Nov	27	AC Circuits	36 & 25
M	Nov	30	AC Circuits	36 & 25
T	Dec	1	**Lab:** LRC Circuits	
W	Dec	2	AC Circuits	36 & 25
F	Dec	4	Study Day	
W	Dec	9	**FINAL EXAM,** (8:00am –10:00am)	