COLLEGE PHYSICS II PH 201-7B / 202L (4 hrs) Summer 2006

Lecture/Recitation: Monday, Wednesday, 5:30-8:30 PM, Campbell Hall (CH) Room 301
Instructor: Prof. Thomas Nordlund tel. 934-0340, office CH 345, e-mail nordlund@uab.edu
Course web sites: www.phy.uab.edu/~nordlund Click on appropriate course. Username/password to be provided in class. Homework web site: www.webassign.net .
Office Hours (tentative): Mon 1:00-3:00 pm, Wed. 1:00-3:00 pm in CH 345 and by appointment.
Course Description: The second of introductory, trigonometry-based college physics sequence. Topics include: Electric forces and fields, electric potential energy, electric circuits, magnetic forces and magnetic fields, electromagnetic induction, electromagnetic waves, optics, selected topics of modern and nuclear physics. The course has both a lecture/recitation and a required laboratory component.
Course Prerequisite: Physics 201/201L; co-requisite: PH 202L (College Physics II Lab, 0 hrs)
Course Text: Cutnell & Johnson, Physics, 6th Edition (2004, hb. full version or pb. Vol. II)
Lab Text: Lab handouts will be provided.

Related UAB core learning outcomes: Demonstrate the ability to collect and evaluate information within the context of the scientific method and to use this ability to further one's understanding of the natural world. Demonstrate the ability to apply mathematical skills and quantitative reasoning to solve problems and interpret information. *Physics is concerned with development of thinking, analysis and problem-solving skills, not memorization of facts.*

Course learning objectives.

- Demonstrate depth and breadth of knowledge (understanding!) of important ideas, methodologies, and technologies relating to electricity, circuits, magnetism, optics, and modern physics in the context of the scientific method.
- Demonstrate ability to interpret data, apply fundamental physical concepts, reason quantitatively and use mathematical analysis skills to effectively solve problems. You should be able to: 1) read a description of the problem and translate nonscientific prose into the language of physics, identify key quantities that point to a solution; 2) set up a diagram to assist in analyzing the problem: 3) determine a relationship between the given physical quantities and the ones to be found; 4) carry out mathematical operations to arrive at a solution.
- Demonstrate (in the associated laboratory) the ability to collect, evaluate and communicate scientific information.

Measurement of learning objectives: Homework problem sets, class exercises/quizzes and exams will be used to measure understanding of the fundamental concepts presented as well as student ability to apply this understanding to problems. Immediate grading of the problems by the homework system will provide feedback to students on their strengths and weaknesses. Problem sets and exams also provide an opportunity to evaluate the progression of students' reasoning and mathematical skills.

Grade weights:			
	Homework:	20%	A: 90% or above
	Lab	15%	B: 80%-89.9%
	Quizzes	10%	C: 70%-79.9%
	Midterm Exam	20%	D: 60%-69.9%
	Final Exam (2.5 hr)	35%	F: 59.9% and below
	TOTAL:	100%	

Exams: One *two-hour midterm* and one *comprehensive final exam* will be given. Textbook and notebooks are not allowed in the exams. One letter-size formula information sheet is allowed. A calculator *without physics, engineering, or information-storage modules* may be used. There will be no make-up tests & exams except for extraordinary circumstances (*documented* illness, etc.). The exams will be based on problems related to homework and problems discussed in class. In addition, some qualitative questions based on assigned text reading may appear. To do well on the exams, you should do the reading assignments before class, pay attention to lectures, and personally work all of the homework problems when they are assigned. Exams will have two sections. (i) Extended problems. Unlike homework, this part of exams will be graded on a step-by-step basis. Full credit will be awarded if the right answer is obtained for the right reasons. Show all work on this part! (ii) Multiple-choice. Since most of you will be taking standardized exams, I will make

about 25% of each exam multiple-choice. Do not assume "multiple-choice" means you can figure out the answer in your head in 30 seconds or less, or that you should be trying to recall a memorized answer.

Quizzes: Five quizzes will be given, three of which will be "pop" quizzes. One quiz score will be dropped. They will take the form of class exercises (given in most classes) that are graded. Quizzes may be made up only on the basis of acceptable, documented evidence (professor's discretion).

Homework: Homework is electronically administered via a password-access website http://www.webassign.net Homework due dates/times are enforced by the computer system. You may attempt any problem up to 8 times, unless otherwise indicated. ***Note eastern zone times on website.***

Start homework as soon as a problem set is given and work out answers on paper, drawing diagrams and *showing all steps, even though the computer only scores the answer*. It is critical to work these problems yourself, as this is the primary way to lock in understanding of physical principles and to develop the problem-solving skills necessary for success on the exams. Do not fall into the trap of following someone's recipe for solving the problems, even if those recipes are correct. Such an approach will fail you on exams and in later courses.

To solve homework problems, you need internet access with web browser. All students have access to internet-enabled computers at UAB.

Lab. Procedures and policies will be explained by your lab TA and overseen by Prof. Martin (CH 344).

Attendance. Active* listening and participation during the lecture is an important part of learning Physics. Many students do not learn much from just reading the text. While attendance does not necessarily indicate active listening during lecture, active listening cannot be accomplished without attendance. Attendance is especially important for this compressed, 9-week course. *I will not record attendance, but 3 "pop" quizzes will be given.*

Communications. Consult the main course web site www.phy.uab.edu/~nordlund frequently for announcements, problems, hints, supplementary material, etc.

"Recitation" (last 50 minutes of class): This "recitation" time is generally reserved for exercises (given most classes) and/or quizzes, review/problem sessions, or when time is needed to catch up in lecture. Two class breaks will generally occur, one just before the recitation time.

Pace of course: This 9-week version of PH 202 necessitates a large amount of material be covered in each class. The pace is rapid and not all text sections will be covered in lecture. Do not to get behind!

Tentative Schedule*:

Week	Date	Text Reading**	Topics
1	May 31	Ch 18:	Introduction & electric forces
2	June 5,7	18, 19	Fields and potential energy
3	June 12,14	19, 20	Potential and circuits. *Quiz† June 12*
4	June 19,21	20, 21	Circuits, magnetic forces
5	June 26,28	21, 22	Magnetic fields, induction
6	July 3,5	25	Light: reflection. *Midterm July 5: Ch's 18-22*
7	July 10,12	26	Light: refraction, optical instruments
8	July 17,19	27	Light: waves and interference. *Quiz† July 17*
9	July 24,26	29, 30	Quantum mechanics
10	July 31	30, 28‡	The atom, special relativity
	Aug 2	**Final Exam**	4:15-6:45 PM. Comprehensive

* Check course web site www.phy.uab.edu/~nordlund for updates, news, and notes.

** You are responsible for all assigned chapter sections, even though some topics will not be covered in lecture.

† Three other unannounced quizzes will be given

‡ There may not be time for Ch 28, Special relativity

* "Active" listening implies alertness (of course), but also a constantly questioning mind—"Why is the professor saying that? Why did he use that diagram? Why not use the law of cosines instead of vector components?..."