

# PHYSICS 211/202

SPRING 2007

**Section:** 21034/21001 **Lecture:** MW 9:00–10:20 am **Lab:** W 11:00–1:50 pm SEM 112

**Instructor:** Dr. Brinda Subramaniam **Office:** S - 267  
**Phone:** (714) 484-7000 ext. 48645  
**Email:** bsubramaniam@cypresscollege.edu

**Office Hours:** M 12:00 – 2:00 pm R 10:30 am – 1:30 pm

**Required Texts:** **College Physics**, 7th edition by Serway / Faughn, **Volume II**

**Optional Supplement:** Student solutions Manual and Study Guide

**Supplies:** Graph paper, scientific calculator, ruler, and protractor.

**Prerequisite:** A grade of C or better in Physics 210 or Physics 201.

This course is the second half of a two-semester physics sequence for life science and other related majors. It is a four-unit course which includes lecture and laboratory work. The class will meet twice a week on Monday and Wednesday. Laboratory is a major part of the course and will account for 20% of the total grade. This course will cover topics in electricity, magnetism, optics, and modern physics.

**Grades:** Grades will be based on the following maximum point scheme.

Four Exams	650 points	65%
Laboratory	200 points	20%
Quizzes	150 points	15%

**Examination:** Three exams will be given during the class time and the fourth exam will be given on the day of the final. Each exam will be two to three-hour long. Tentative examination dates are given below. There will not be any final exam in the laboratory. Unless a confirmed case of illness or some other dire condition is established, a zero will be given for any missed examination. Exams will be closed book; and all the equations will be provided. Exam will include some short and long problems. You should bring Blue Book for exams.

## EXAM SCHEDULE

EXAM I	WEDNESDAY	FEBRUARY 14, 2007
EXAM II	WEDNESDAY	MARCH 14, 2007
EXAM III	WEDNESDAY	APRIL 18, 2007
EXAM IV	MONDAY	MAY 21, 2007

**Homework and Reading:** Lecture topics and homework assignments are listed in the Table at the end of the syllabus. You should read the assigned lecture topic before coming to the class, take notes in class and ask questions. Some 15 - 20 problems will be assigned from each chapter. Homework assignment will not be collected or graded. However, it is very important to do the problems on your own to do well in the exams and quizzes. Solutions to the homework problems will be made available at the library reserve desk.

**Quizzes:** There will be an approximately 30 minute quiz. It will be given at the beginning of the lab class. The chapters will be announced in class. The questions will be asked from the homework assignment. There are no make-ups for missed quizzes. NO EXCEPTIONS!!

**Instructional Objective:** By the completion of the course, the student will be able to understand the basic principles of heat, electricity, magnetism, optics, quantum physics and atomic physics. They will learn to solve numerical problems using algebra, trigonometry, geometry, and some calculus. The topics that will be discussed in this course are listed below:

Electric forces and fields  
Magnetic forces and fields  
Wave Optics  
Atomic Physics

DC and AC Circuits  
Geometrical Optics  
Quantum Physics

**Attendance:** Success in this course will depend to a great extent on your coming to the class and solving problems on your own. Much of the material is complex, and you must hear the lecture/discussion on the material to understand it. If absences become excessive, you may be dropped from the class. If the drop date has passed you will receive an F grade. It is your responsibility to officially drop the course.

**Academic Honesty:** Cheating in any form, whether copying directly from another student's work, or plagiarizing material from another source, or passing along test information, is strictly forbidden. If caught, you will fail the course.

**For a successful completion of the course:**

- Plan to study a minimum of **8 hours** per week outside the class time.
- Remember what you have learned in Physics 201/211.
- Attempt all homework problems yourself. If you get stuck, ask for help. Do not skip the topics.
- Enroll in the Problem Solving Class, **Phys 022, CRN # 23595, Monday 10:30 – 11:35 am**. The class starts on February 5, 2006. It is a one-unit course with CR/NC.
- Work in small study groups (2-3) for homework and exams.
- GET HELP!! From the instructor during office hours, the tutoring center and the Math lab.

## HOMEWORK AND READING ASSIGNMENT

This is a tentative schedule. You will be notified of the changes in class.

Week /Month	Lecture Topic	Homework Assignment
1 / Jan 15	Electric Forces and Electric Fields	Ch.15 P 9,11,13,15,16,23,25,27,39,43,51,53,59,61,63
2 / Jan 22	Electrical Energy and Capacitance	Ch.16 P 7,17,19,25,27,31,33,35,37,39,45,51,55,57,60,61
3 / Jan 29	Current and Resistance	Ch.17 P 8,9,19,27,29,35,39,47,53,55,57,61
4 / Feb 5		
5 / Feb 12	Direct Current Circuits	<b>Test I on Wednesday, February 14, 2006</b> Ch.18 P 7,9,11,13,17,21,23,25,27,29,33,35,47,49,56,60,61
6 / Feb 19	Magnetism	Ch.19 P 7,9,17,19,24,29,31,33,39,41,45,53,55,59,61,62,66,67
7 / Feb 26	Induced Voltages and Inductance	Ch.20 P 10,15,17,20,21,25,33,35,39,44,53,55,57,61,65
8 / Mar 5	AC Circuits and Electromagnetic Waves	Ch.21 P 6,9,11,15,17,19,21,23,25,27,30,31,34,37,39,49,53,55,61,63,67
9 / Mar 12		<b>Test II on Wednesday, March 14, 2006</b>
10 / Mar 19	Reflection and Refraction of Light	Ch.22 P 5,19,20,21,25,27,30,31,38,41,43,47,49,51,53,55,59,61
11 / Mar 26	Mirrors and Lenses	Ch. 23 P 7,11,15,17,19,26,31,33,35,40,43,45,51,56,57,60
12 / Apr 2		<b>SPRING BREAK</b>
13 / Apr 9	Wave Optics	Ch.24 P 5,7,11,13,17,19,21,23,25,27,31,33,37,39,41,43,49,51,53,55,59,63,65,67
14/ Apr 16	Optical Instruments	<b>Test III on Wednesday, April 18, 2006</b> Ch.25 P 11,13,15,19,21,25,27,29,31,33,37,39,41,49,51,53,55,57
15 / Apr 23		
16 / Apr 30	Quantum Physics	Ch.27 P 5,9,13,15,17,19,21,23,25,29,31,33,37,39,41,51,53,55
17/ May 7	Atomic Physics	Ch.28 P 5,7,11,13,15,17,19,23,25,29,31,37,39,47,49,51
18 / May 14		
19 / May 21		<b>Final Exam Monday, May 21, 2006</b>

**Instructor:** Dr. Brinda Subramaniam

**Grading Policy:**

Grades depend on lab write-ups and general performance in class.

All the experiments will be done on Wednesday except for the three weeks when we will have exams.

**Notes:**

The lab is an integral part of the lecture. The experiments that you perform in class will provide you the physical evidence of the principles learned in lecture and hands on understanding of some difficult concepts.

You have to do all the experiments. If you are absent, you can turn in the lab report using your partner's data but it can be done only once. If you miss more than **two** reports, you may be dropped automatically. There are no make-ups for the lab.

You will be working in a group of three students. You are expected to collaborate in all parts of the experiment. All the groups must get instructor's signature on the data collected during the lab period at the end of each laboratory experiment. Completed lab report will be due at the beginning of the class one week after the experiment is performed. You will lose 10% of points/week for late lab reports.

How to write lab reports

All reports should include the following items:

1. Cover sheet with title, date, your name and partner's name.
2. Original data, calculations, graphs, answers to the questions
3. Graphing data:  
All graphs should be done in pencil on graph paper and should have a title. You may use graphing software.  
Axes should be labeled with units and scale should be marked.
4. Conclusion:  
What principle or law of nature did you investigate?  
What did you learn?  
What are the major sources of error in the experiment?

Week	Date	Name of the Experiment
1	January 17	Calibration of Torsion Balance (Lab 1)
2	January 24	Coulomb's Law (Lab 2)
3	January 31	Electric Fields and Equipotential Lines (Lab 3)
4	February 7	Capacitance of a Parallel Plate Capacitor (Lab 4)
5	February 14	<b>Test I</b>
6	February 21	Ohm's Law and Nonlinear Resistors (Lab 5)
7	February 28	Series, Parallel, and Series-Parallel Circuits (Lab 6)
8	March 7	e/m of an electron (Lab 7)
9	March 14	<b>Test II</b>
10	March 21	Oscilloscope (Lab 8)
11	March 28	AC Circuits (Lab 9)
12	April 4	<b>Spring Break</b>
13	April 11	Reflection and Refraction (Lab 10)
14	April 18	<b>Test III</b>
15	April 25	Mirrors and Lenses (Lab 11)
16	May 2	Interference and Diffraction (Lab 12)
17	May 9	Prism Spectrometer (Lab 13)
18	May 16	Lecture and Review for the Final