PHYS 112: General Physics II

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Texts: *Principles of Physics*, 4th edition, by Serway and Jewett
General Physics Laboratory Manual by Laney Mills

Co-Requisite:
MATH 220, or permission of the instructor.
PHYS 112L (either section).

Lecture: MWF 12:00–12:50, SCIC 108

Office Hours: M–R 9:00–10:00, T–W 2:00-3:00, or by appointment.

Web: This class has a WebCT page at `http://webct.cofc.edu`. All students will be automatically enrolled. This gives you access to chat rooms with other students in the class for solving homework problems, finding a study partner, etc.; the latest homework assignment; etc. Some simulations may be added during the semester.

Please note: your *college* email address is used for this, not some other commercial email address you might have.

Course Description: The second semester of a year-long sequence in Calculus-based General Physics. Topics covered include electricity and magnetism, electric circuits, light, optics, and introductory quantum physics applied to atoms and nuclei.

Instructor Bio:

Education: B.S. in Physics from M.I.T. (1975) followed by a disastrous year of Astronomy graduate school at U. of Chicago. Brain healed while teaching at the McCallie School (a boys prep-school) for seven years, then earned a Ph.D. in experimental condensed-matter physics from M.I.T. (1990). Thesis title: "Transport and Localization in Oxygen- and Sr-Doped La_2CuO_4". Eight years teaching at Eastern Oregon University (La Grande, OR), and now in twelfth year at the College of Charleston.

Research: Current research interests in computational and experimental biomedical optics (specifically Monte Carlo simulations of treatment of Barrett's esophagus by photodynamic therapy in collaboration with Dr. Linda Jones and physicians at the Mayo clinic in Jacksonville, FL.) and simulations of surface charges of simple circuits.

Personal: Married to Dr. Lucy Preyer, a psychiatrist in private practice in Charleston. Two ex-male cats allow us to live in their home.

Attendance: Curiously, I think attending and participating in class is to your advantage, and I expect you to attend each class. I will. **You may be dropped from the course if you have three or more unexcused absences (WA counts as an F in computing your GPA).**

You are also expected to **read** the appropriate sections of your text. Rather than repeat verbatim what is in the text, we will work problems, answer questions, and talk about topics that your book does not discuss or which I want to handle differently. **You are responsible for what is discussed in class. If you miss class the day assignments or new test dates are announced, it is your responsibility to find out about it.**

Homework: Homework is *very* important! Learning physics is not a spectator sport; it is a full-contact activity. I do not expect you to get perfect scores on new material, but I do expect you to try hard. I count the homework quite highly to encourage your efforts to master the subject.

I want to see *solutions*, not just answers. Adding a sentence here and there explaining what you are doing, where you are going, what formula you are using, etc., will help me (and you) enormously. Units are important, and answers without correct units will not be counted as correct.

Several problems will be assigned at the start of each class, and one problem from the previous class will be collected and graded. Homework is due at the beginning of class, and late homework will not be accepted except by pre-arrangement. You are **encouraged** to work together on the homework, but each person must turn in their own problem solutions.

Tests: There will be three tests throughout the semester (see dates below). Each will be 50 minutes long. No formula cards or symbolic math programs are allowed, only calculators, sharp pencils, and sharp minds. A formula sheet will be provided the class before the test, and will come with the test.

You will be notified at least a week in advance (and the web page will be updated) if there are any changes in the test dates. A valid excuse from the Dean of Undergraduate Studies is required to make up a missed test.

The lowest test grade will be replaced by the final exam grade when computing your final grade, if this is to your advantage.

Grading:

Homework:	30 %
Tests:	40 %
Final:	30 %

A:	90-100	C:	70-75
B+:	86-89	D:	65-69
B:	80-85	F:	Below 65
C+:	76-79		

Honor Code: The Honor Code of the College of Charleston specifically forbids cheating, attempted cheating, and plagiarism. A student found guilty of these offenses will receive a failing grade in the course. Additional penalties may include suspension or expulsion from the College at the discretion of the Honor Board.

Tentative Schedule

W	Aug	26	Cpt. 19: Electric Forces and Electric Fields
F	Sep	4	Cpt. 20: Electric Potential and Capacitance
F	Sep	31	Cpt. 21: Current and Direct Current Circuits
M	Sep	21	Cpt. 22: Magnetic Forces and Magnetic Fields
F	Sep	25	**Test #1** Chapters 19–21
M	Oct	5	Cpt. 23: Faraday's Law and Induction
M–T	Oct	12–13	**Fall Break!**
W	Oct	14	Cpt. 24: Electromagnetic Waves
W	Oct	21	Cpt. 25: Reflection & Refraction of Light
W	Oct	28	Cpt. 26: Image Formation by Mirrors and Lenses
F	Oct	30	**Test #2** Chapters 22–24
F	Nov	6	Cpt. 27: Wave Optics
F	Nov	13	Cpt. 28: Quantum Physics
F	Nov	20	**Test #3** Chapters 25–27
M	Nov	23	Cpt. 29: Atomic Physics
W–F	Nov	25–27	**Thanksgiving!**
M	Dec	4	Cpt. 30: Nuclear Physics
W	Dec	16, 12-3 pm	**Final Exam**, Chapters 19–30