

UNIVERSITY OF KENTUCKY
DEPARTMENT OF PHYSICS AND ASTRONOMY
PHYSICS 213 Sections 401,402 Ranger
COURSE SYLLABUS
SPRING 2005

1. **PURPOSE:** You are about to tread where few in our society dare, the realm of Science and Technology at a fundamental level. Your future clearly demands expanded levels of understanding in these areas to successfully deal with the complex issues on the horizon. Accept this challenge aggressively!! Become a Physics Ranger. (or Continue your training)

Physics 213 is designed to provide the student with a comprehensive introduction to electricity, magnetism, photonics (light), quantum theory, nuclear physics and special relativity in a non calculus framework.

2. **OBJECTIVES:**

a. Each student will develop a conceptual understanding of the rudimentary principles of electricity, magnetism, (light) and modern physics.

b. Each student will develop and exercise a flexible, logical problem solving methodology applicable not only to this course but to their greater academic and day to day challenges.

3. **SCOPE:** This course builds on the classical concepts developed in PHY211. Vectors, Force, Fields and Conservation of Energy. It begins with a survey of basic laws of electricity and then analyses some basic electrical devices. It continues with magnetism and explores several electro-magnetic devices. Electro-magnetic phenomena “light” is investigated using principles from both sides of the wave-particle duality. The last phase of the course introduces modern physics including some special relativity, quantum mechanics and general topics in nuclear physics.

4. **MISSION:** The instructional team for PHY 213 will ensure that every student is given ample opportunity to master the course goals and achieve their full potential, while looking for ways to improve the course pedagogy to better meet the needs of all students both present and future.

5. EXECUTION:

a. The instructional team is composed of the following members each with a specified role:

(1) Lecturer: (CP 153)

- Present lectures that compliment the book and reinforce learning objects.
- Ensure that all components of the course are coordinated and sequenced according to this syllabus.
- Provide help sessions and additional instruction as requested.(problems will not normally be worked in lecture)
- Ensure testing and subsequent grading is equitable and consistent with other sections and university policy.

(2) Recitation Instructor: (CP 287)

- Present recitation sessions focused on student needs while reinforcing key concepts from assignments and lecture.
- Prepare and grade exams quizzes and homework.
- Provide help sessions and additional instruction both scheduled (office hours) and by appointment.

(3) Laboratory Instructor: (CP 167)

- Prepare Laboratory lessons in accordance with the Lab Syllabus (published separately, see web site)
- Emphasize connectivity between the Lab and the Lecture and study assignments.
- Grade all Lab reports.
- Assist in the preparation of exams to ensure continuity with Lab course material and objectives.

(4) Students:

- Study assigned sections prior to lecture.
- Work assigned problems and questions prior to recitation.
- Develop and Maintain a student reference sheet used for each graded event. One side of an 8.5"x11" paper for each hour test and both sides of one sheet for the final.
- Seek additional help early. Use Lecturer and TA's Office hours or make appointments. Use "On Duty" Grad Students in the Department of Physics and Astronomy Resource Room (CP 148, 9:00- 5:00 weekdays).
- Test yourself before the test
- "Don't Forget Nothin" (MAJ Robert Rogers, Standing orders to his

Rangers, 1759).

- Increase your personal velocity to meet the demands of the course.

b. Other Assistance and Study Aids:

- (1) Study Groups. Highly recommended. You get out what you put in. University rules on plagiarism apply.
- (2) Computer Software. See Web Page links.
- (3) Private Tutors. Ask at the Physics office.(Joanna) Plan ahead; they are booked early.

6. ADMINISTRATION:

- a. Course Text: *College Physics*, by Serway and Faughn, sixth edition.
- b. Lab Text, Laboratory Manual for General Physics, Part 2, by Ellis. Available at “Johnny Print ”
- c. The TI-83/84 Calculator is **required** for all PHY213 students (84 plus Silver is highly recommended)
- d. Schedule and Assignments

Lecture/ Recitation date	Topic	Study	Notes
R: 12 Jan	Introduction	Review Vectors forces, Fields and energy	Problem solving Handout
L: 13 Jan	Introduction/ Electric Forces	Ch15, Sec 1-3	
R: 17 Jan No Class	Electric Forces	Martin L. King Day	
L: 18 Jan	Electric Fields	Ch15, Sec 4-6, 9 Gauss'Law	
R: 19 Jan	Forces and Fields		Last Day to Add
L: 20 Jan	Potential	Ch16, Sec 1-4	
R: 24 Jan	Potential		
L: 25 Jan	Capacitance	Ch16, Sec 6-10	
R: 26 Jan	Capacitance		