Sections 0001, 8001 & 9001    SP327 Twentieth Century Physics    Fall 2015

Instructor: Professor Debora M. Katz
Office: Chauvenet 256B
Phones: 410-293-6656 (office) and 410-990-4789 (home)
E-mail: dkatz@usna.edu

Availability: I teach TR8, 9 and 10. I will be available these days after class, at 0730 and at 1245. You can always drop by my office, but it is best to make an appointment ahead of time. Please talk with me after class, give me a call, or send e-mail. If you make an appointment and find you can't keep it, please let me know.

Course Objective: To study the development of physics since about 1900, with particular attention given to relativity theory, quantum theory, and atomic physics.

- Textbook website (http://wps.aw.com/aw_harris_mp_2/69/17800/4556992.cw/index.html). This site offers a brief review of classical physics as well as some interactive exercises, animations and other features that you may find interesting and helpful.
- Read the textbook before each lesson. Your class participation extra credit points depend on your reading.

Homework: You learn physics best by doing it. You will have approximately one homework set due each week. Problems very like some of them will appear on exams. When you do your homework, you practice applying knowledge and techniques that you have learned in class. Ideally, you also learn to communicate your understanding clearly and completely. How you approach your homework will have a lot to do with how much you learn and how well you do in SP327.

Guidelines for preparing your weekly homework solutions:
- Please turn your homework in on time. I do not accept late homework. (I will make exceptions for emergencies, but planned absences are no excuse for late homework.)
- We'll start many of the homework problems in class.
- Take pride in the work you turn in. Strive for clear, correct, complete solutions.
- Be sure that your name and the date are at the top of each page you turn in.
- Give yourself plenty of room to write: put only 1 or 2 problems on a page. Do not write on the back of the page. I prefer Staedtler engineering paper.
- Label each problem with chapter and problem number.
- Use words effectively: explain why you decided to use a particular approach, outline the steps of your solution, and summarize your results.
- Start your quantitative solution with an equation written entirely in symbols. As much as possible, solve it algebraically for the desired quantity before you substitute numbers.
- Report all numerical answers with the appropriate units.
- Work in pencil so you can correct errors as you discover them. If a solution becomes hopelessly convoluted and spread all over the page, recopy it neatly so that its organization is evident.
- Feel free to collaborate with your classmates insofar as it helps you understand the material, but don't blindly copy someone else's work.
- Don't use online "resources" like Chegg Study or instructor solutions manuals. They will probably not help you develop a deep understanding of the material.
**In class participation:** You have been assigned to a group. On any day, your group may be called upon to explain an example problem from the reading. I will randomly determine which group is presenting each example problem. Your group will be graded on a scale of 0-2 based on clarity of your presentation. (You don’t have to know everything, but you do need to show you have read the textbook before class.) This grade will count as extra credit on your homework. In addition non-presenting students will evaluate the presentation on a score card. These score cards will also be used to award extra credit on your homework.

**In-class exams:** I plan to give 4 exams during the semester. On these exams, I will usually ask you to answer short conceptual questions or work problems similar to those you have done for homework. For each exam, you may use your calculator. Unless I tell you otherwise, you may not use any other test aids.

**Final exam:** There will be a final exam scheduled sometime between December 10 and 20. It will be similar to the mid-semester exams and the test-aids policy will be the same.

**Grades:**
At 6, 12 and 16 weeks your grade is equally weight between homework and the in-class exams. Your final grade is 70% of your 16 week grade and 30% of your final exam grade. There is an exception to this rule: *In you score an A on the final exam, you will get an A in the course no matter what you have at 16 weeks.*

**Class demeanor:** I like an interactive, focused, but informal, classroom atmosphere because I believe that is the best environment for learning. Please do your part to help create such an atmosphere. Here are some suggestions:

- **Prepare for class by reading the assigned textbook sections and looking over the examples ahead of time. Take notes on the reading.**
- **Bring your book, paper and a calculator to class.**
- Don’t allow yourself to be distracted by your cell phone, computer, or other electronic devices.
- Don’t work on other subjects during class.
- Stay alert and participate. If you’re feeling sleepy, please get a drink or stand up at the back of the classroom.
- Feel free to ask questions and be ready to help answer your classmates’ questions.
- Treat each other with respect.

**Learning outcomes:**

1. **Remember** the principles of special relativity, general relativity and early quantum mechanics.

2. Demonstrate detailed knowledge and comprehension of the principles of special relativity, general relativity and early quantum mechanics.

3. Demonstrate the ability to apply the principles of special relativity, general relativity and early quantum mechanics to simple problems.

4. Demonstrate the ability to synthesize the principles of special relativity and early quantum mechanics to solve higher-order problems.