Instructor: Prof. Tabetha Hole
Office: SL204
Phone: 801-626-7973
Email (preferred): tabethahole@weber.edu
       -- or via Canvas
Office Hours: As a general rule, I'm happy to schedule additional appointments. My regular hours are
    M: 10-11; Tu: 1:30-2:30; W: 10-11; Th: 10-12; F: 1:30-2:30 in SL 204 (my office)
    Th: 4:00-5:30 PM **in SL 220** (the Physics computer lab)

Welcome!

Welcome to Modern Physics. In this course, you will be introduced to some of the most astounding and counterintuitive aspects of our universe. The death of absolute time and simultaneity, the reshaping of physical objects, the phenomena of quantum tunneling and entanglement are mind boggling, and require both the introduction of new mathematical tools and the restructuring of the way we see the universe. I am excited to be able to share this journey with you.

The course goals are:

- Examine the field of modern physics, with particular attention paid to current research topics.

- Develop your intuition using the principles of modern physics.

- Apply your experience in introductory physics to develop problem solving skills for more complex problems

The Text

For most of the relativity portion of the course, our text will be <u>Six Ideas that Shaped Physics, Unit R</u>, by Thomas A. Moore (McGraw-Hill, 2003). For the remainder of the course you'll need <u>Modern Physics for Scientists and Engineers</u> by Taylor, Zafiratos and Dubson (Prentice Hall, 2004). Both are available at the bookstore, but you can purchase them wherever you like.

Grades

I'm sure most of you don't really care about grades, because you are motivated purely by the desire for knowledge. But just for the record, here is how they will be determined in this class.

1. Class sessions for the first 3/4 of the course will be spent on lecture, demonstrations, example problems, and discussion. *Please feel free to interrupt with questions at any time*. Class attendance during this portion of the course is not required, but is strongly recommended. The last 1/4 of the course will be run as a "seminar" in contemporary physics, with presentations by students. Attendance at these sessions is required and will count toward your grade.

2. You will have homework due most weeks on Wednesday at the beginning of class. These problem sets are an opportunity for you to practice and learn. I strongly encourage you to work with classmates on problem sets. In this way you can learn from each other, prevent careless errors, practice putting ideas

into words, and work in an environment more like the "real world." You are also welcome to ask me for hints at any time. However, the work that you turn in must be entirely your own. While you may discuss the problems with others as much as you like, you must write down (and understand!) your solution on your own. Late assignments will be accepted for 48 hours after the deadline, depreciating linearly to 0 over that time period. Thus, homework worth 100% Wednesday at 11:30am is worth 50% Thursday at 11:30am and worth 0% Friday at 11:30am. (When in doubt, time will be determined by when the assignment reaches my hands.) You will be graded not only on your getting the right answers but also on the completeness of your solutions and on how well you communicate on paper. Your solutions should be written so that any classmate could read and understand them. Solutions that are incomplete, illegible, or poorly organized may lose points, even if the final answer is correct. I will make official solutions to each problem set available soon after the due date.

Exams:	
3 @ 15% ea.:	= 45%
Homework:	= 35%
Project:	= 20%
Total:	= 100%

3. We will have three midterm tests, each covering approximately 1/4th of the course material and worth 15% of your final grade, for 45% total. On the exam day listed in the calendar, we will have a review session. The exam will be available in the Science Labs Testing center (SL 228). They will be closed-book, but you may use a calculator for doing arithmetic. The time limit on each test will be 90 minutes, and you will have approximately two days during which to take each test.

4. During the last two weeks of the course, each of you will give a 15-minute presentation to the class, on a modern physics topic or application of your choice. You will then write a paper on your project. You will be graded on your participation during your classmates' presentations. See the separately attached page for more details.

In Summary

I'm excited to have you in this class. I respect your time and appreciate your attention. I expect that you will respect me and the class by doing your own work, and by silencing your cell phones and minimizing disruptions during the lecture. In return, I hope to share with you the crazy and beautiful ways of the universe.

Note: Any student requiring accommodations or services due to a disability must contact Services for Students with Disabilities (SSD) in room 181 of the Student Service Center. SSD can also arrange to provide course materials (including this syllabus) in alternative formats if necessary. The SSD office may be reached by phone at (801) 626-6413 or e-mail address ssd@weber.edu.