PHY361 Syllabus (Spring 2016)

Welcome
This course is primarily an introduction to relativity and quantum mechanics, the foundation and explanatory framework of much of modern physics. We will learn about relativity and quantum theory, and study ways in which “classical” laws must be modified - or even replaced - in order to account for the “shortcomings” of the classical laws of physics. In addition to relativity and quantum physics, as time permits, we may also introduce some solid state physics and/or particle physics.

General Information
Professor: Steven Blusk
Office: 327 Physics Building
Phone: 443-3158
E-mail: sblusk@syr.edu
Office Hour: Tuesday, 2-3pm, or any time by appointment.
I enjoy talking to students and am eager to get feedback on the course. Please drop by during my office hour, or send me email to make an appointment.

Administrative Help: If you need handouts or other information, try the Undergraduate Office, Room 111 of the Physics Building during regular office hours.

Prerequisites & prior knowledge
It is expected that you have taken PHY212/216 or the equivalent, and that you have proficiency in calculus, including derivatives and integration. Having a good command of the mathematics is important so that it does not hinder you in understanding the physics and in problem solving.

Textbook
The textbook is Modern Physics, 2nd edition, by Randy Harris. The text is available at the Syracuse University Bookstore. This is the primary textbook and the source of most of the homework problems. Tentatively, we will cover: Chapters 1-7, 8.1-8.3, Ch 10 and Ch 12 (I will not cover every section in every Chapter though).

There are a handful of other fairly good textbooks on Modern Physics out there. Some of these include (but not limited to):

- Feynman, Leighton and Sands, The Feynman Lectures on Physics, volume III, Addison-Wesley. This is the third of a wonderful series of introductory physics books. Highly recommended. Somewhat higher level than Krane, but great reading. A must for all interested in physics. Available online at: http://www.feynmanlectures.caltech.edu/III_toc.html
Homework
Problem sets are an essential part of this class. The homework is extremely important. The assignments are designed to help you master the most important points of each topic. You are encouraged to discuss and work with other students on the homework, the lectures, and the problems. You should, however, always generate your final homework solutions by yourself. If you have specific questions for me, I suggest you email me as I check my email frequently.

One problem set will be assigned every week. It will be due by 5pm of the indicated due date. Late homework will not be accepted. You can hand in the homework to me in class or put it in my mailbox in the main Physics Department office before 5pm.

Exams & Quizzes
Several short written quizzes (~10 min) will be given periodically during the course. It will generally be just 1-2 short problems. The main purpose of the quiz is to allow both me and you to assess your understanding of the material. There are no makeup quizzes. If you miss it, it is a zero. I will drop the lowest quiz score, so if you miss one, it will serve as your dropped quiz.

There will be 2 midterm examinations and one final examination in this course. The midterm exams are tentatively scheduled for Thursday, February 25, and Thursday, April 7, during class time. If you have a problem with these dates, please let me know within the first week of classes.

The final exam is scheduled for Friday May 6, 5:15-7:15 PM. This exam will cover all of the material in the entire course, but will have a larger share of the “new material”. No makeups for a missed final.

Like the quizzes, the exams are based on the homework and the material covered in the lectures. The best way to prepare for exams is to do all the homework carefully and to attend lectures in an active way, asking questions as needed to clarify issues. When studying the material and working on the homework you should also continually ask yourself questions like Why?... and What if?.... An excellent way to review concepts we cover is to rewrite your lecture notes cleanly and carefully, filling in any steps skipped in class (I strongly encourage this).

Grading Policy
The final grade for this course will be determined as follows:

- homework: 15%
- quizzes: 10%
- midterm examinations: 21% each
- final exam: 33%

I do not set fixed boundaries for grades, but I can guarantee that if you get above 92%, you will get an A, above 80% will be at least a B, above 70% at least a C, above 60% is at least a D. Below 60%, I cannot guarantee you will pass the course. While I do reserve the right to modify these limits to be more favorable to students, I will not make them “less favorable” to students.
Doing well in this course
To do well in this course, you must do the HW in earnest, carefully review the notes, read the textbook and keep up with the pace of the course. Moreover, the concepts must be learnt; the logic and approach to solving problems must “make sense”. **Memorization will simply not work** in this course. The only way you develop your problem solving skills is by struggling through problems and thinking deeply about them. Unfortunately, there are no short cuts. You should expect to spend 6-9 hrs/week outside class on PHY361. But as always, there is variability depending on each student’s prior knowledge.

Physics Clinic:  Rm. 112, Physics Building.
The physics clinic is not part of PHY361 per se. It is intended to provide help for all of our physics courses. You may go to *any* TA in the clinic at *any* time. Consult the clinic schedule (also posted outside the clinic) for your favorite TA. You are encouraged to visit the clinic if you have trouble with the homework or have any questions. In the past, some students have used the clinic as a free tutoring service, spending many hours there. This is an excellent idea! The performance of those students improved dramatically during the course of the semester, on the exams as well as on homework.

Disability accommodation
If you believe that you need accommodations for a disability, please contact the Office of Disability Services(ODS), [http://disabilityservices.syr.edu](http://disabilityservices.syr.edu), located in Room 309 of 804 University Avenue, or call (315) 443-4498, TDD: (315) 443-1371 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented Disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.

Academic integrity
Syracuse University’s Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the policy and know that it is their responsibility to learn about course-specific expectations, as well as about university policy. The university policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same written work in more than one class without receiving written authorization in advance from both instructors. The presumptive penalty for a first offense by an undergraduate student is course failure, accompanied by a transcript notation indicating that the failure resulted from a violation of Academic Integrity Policy. The standard sanction for a first offense by a graduate student is suspension or expulsion. For more information and the complete policy, see [http://academicintegrity.syr.edu/academic-integrity-policy/](http://academicintegrity.syr.edu/academic-integrity-policy/).

Religious Observance Policy
SU religious observances policy, found at [http://supolicies.syr.edu/emp_ben/religious_observance.htm](http://supolicies.syr.edu/emp_ben/religious_observance.htm), recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to are religious observance provided they notify their instructors before the end of the second week of classes. For fall and spring semesters, an online notification process is available
through MySlice/StudentServices/Enrollment/MyReligiousObservances from the first day of class until the end of the second week of class.

Students should let the instructor know as early as possible, but no later than 2 weeks before the exam, in order to schedule a makeup of any missed exams.