PHY 402 – Quantum Mechanics
Winter 2016 Syllabus
Class meets MWF, 9:15 AM – 10:20 AM Location: Room 8-241

Instructor: Alexander L. Rudolph, Department of Physics, 8-220
E-mail: alrudolph@cpp.edu
Office Hours: MW 10:30-11:30 am, other times by appointment
Course Webpage: www.cpp.edu/~alrudolph/classes/phy402/

Course Description
Physics 402, Quantum Mechanics is the second quarter of the two-quarter sequence of senior-level quantum mechanics (QM), the foundation and explanatory framework of much of modern physics. We will cover the formalism and postulates of QM, solutions in 3-dimensions, the hydrogen atom, including angular momentum and spin, and some advanced topics. (4 credits).

Learning Goals
The learning goals for this course are the same as for PHY 401. For a more detailed description of these goals, see the file, http://www.cpp.edu/~alrudolph/classes/phy401/P401-402_Course_Goals.pdf.
Among the most important are:

- Develop a familiarity of the workings of QM, namely, be able to do some QM
- Develop the ability to interpret the mathematics of QM conceptually, i.e., explain what the mathematics means
- Develop the ability to visualize the relevant parameters of a system (e.g., psi, potential, probability distribution)
- Be responsible for your own learning: show intellectual maturity

Prerequisites
Physics 401 – Quantum Mechanics I, and Physics 309 – Fundamentals of Mathematical Physics. It is your responsibility to confirm that you meet the requirements for the course. See me if you have questions.

Required Text

Also Required (to be provided)
A classroom response system (CRS) pad or “clicker” manufactured by i-Clicker. This item will have to be registered at the i-Clicker website (www.iclicker.com/registration). When you register your “clicker”, for the ID requested, use your Bronco ID number. NOTE: BRING THIS TO CLASS EVERY DAY.

Grading
The final grade in this class will be weighted approximately as follows:

- 10% on class participation (clicker use)
- 20% on homework
- 30% on one midterm
- 40% on the final exam, Monday, 3/14, 9:10-11:10am

Reading and Homework Assignments
The complete course schedule and all assignments can be found on the course website: www.cpp.edu/~alrudolph/classes/phy402
The Importance of Reading
Quantum Mechanics is a challenging topic, because it combines advanced mathematics with counter-intuitive ideas about how the universe works. Therefore, to fully understand the in-class lectures and activities, to do the homework successfully, and ultimately to do well on the exams, you must do the reading! If you come to class unprepared, and then try to do the reading just to do the homework problems, you will not succeed in this class. It is your responsibility to do the reading and make sure you understand it.

Homework
Homework will be assigned once per week and will be due at the start of class on the dates found on the course website, unless otherwise noted. Late homework cannot be accepted after the solutions have been posted (your lowest homework score will be dropped). Homework is crucial for developing an understanding of course material, not to mention building skills in physical and mathematical problem solving. The homework will require considerable time and personal effort this term!

Exams and Testing Circumstances
There will be one midterm in class and a final on Monday, March 14, 9:10-11:10am. Please do not make any plans that interfere with these exams. If you need to miss an exam, you need to let me know in advance or as soon as possible after the exam, and provide documentation as to why you could not come (doctor’s note, record of a tow, etc.). If the excuse is valid, you will be allowed to make up the exam. You cannot be excused from the final exam and there are no opportunities to take it at a different time. The University has scheduled the time for the class final exam and this is the only time it is to be offered. If you have an irresolvable conflict with other courses’ final exams, please inform me well in advance to make other arrangements. During these closed-book, closed-note exams, you are not allowed to wear headphones, a hat, or allowed to communicate with anyone in the classroom except for the course instructor. Cell phones must remain off at all times during exams. If you have been certified as needing to take an exam under special circumstances, please make the necessary arrangements with the Disabilities Resource Services center well in advance of the exam date (at least 10 days).

Course Conduct
Please turn off cell phones before you enter the classroom. Also, out of consideration for your fellow students, please do not arrive late or leave class early unless you have talked to the instructor in advance. I consider academic dishonesty, including cheating, plagiarism, and fabrication, as defined in the University catalog (see also http://www.dsa.csupomona.edu/judicialaffairs/academicintegrity.asp), to be a serious offense and the maximum punishments allowed will be pursued in all scenarios. This includes completing any homework assignments or taking a test for another student. If nearly (or totally) identical work is submitted by more than one student, all parties involved may receive the maximum punishment allowed. Make your work your own, be original.