PHYS5701 Quantum Mechanics I Fall 2020

This is a graduate course in quantum mechanics, and I am excited to be teaching it. We will build "from the ground up" this fascinating framework for describing all of Nature.

I want you to learn quantum mechanics from the fundamentals, not from a historical perspective. To start, you can forget most everything you learned about quantum mechanics as an undergraduate, but I will remind you of things from time to time, and I'll assume you are familiar with Schrödinger wave mechanics. I will also assume that you have a good background in advanced calculus and the basics of linear algebra. When we discuss scattering theory (in the second semester), it will be helpful for you to brush up on complex functions.

I like to use MATHEMATICA for symbolic manipulation and numerical calculations. Some of the problems will assume proficiency in this or some other similar program.

INSTRUCTOR: Jim Napolitano SERC 416 1-7827 email: tuf43817@temple.edu
Office Hours: Mon 5-7pm via Zoom, or *by appointment*

TA/GRADER: Joseph Delmar email: jdelmar@temple.edu

WEB PAGE: https://phys.cst.temple.edu/~napolj/PHYS5701/

MEETINGS: Wachman 009 Tue 12:30-13:50, Thu 12:30-13:50

TEXTBOOK: Sakurai & Napolitano, *Modern Quantum Mechanics*, Third Edition

A syllabus (including what will be covered in Quantum Mechanics II) is posted on the course web page, along with the homework assignments. There may be adjustments, so check the date at the top of the page.

GRADING POLICY: Grades will be determined by scores on the homework assignments. There is no final exam, but the last homework assignment must be worked independently, and will account for 30% of the course grade. You are encouraged to collaborate on the other homework assignments, and they will account for the remaining 70% of the grade.

Cutoffs for course grades A, B, and C are 90%, 80%, and 70%, respectively. I expect to make some use of "grade modifiers", that is $\pm$ after the grade. I may make other adjustments to the overall grading scheme if there are special circumstances.

LEARNING OUTCOMES

Upon successfully completing the course students will demonstrate an ability to apply concepts and theories of Quantum Mechanics in problem solving tasks, as well as the ability to make use of physical principles along with mathematics to describe quantum mechanical phenomena. The quizzes will emphasize these abilities, as well as the raw knowledge associated with this subject.

ACADEMIC INTEGRITY STATEMENT

Don't copy someone else's homework, and don't collaborate on the final homework assignment. If I suspect you of either, I will ask for an explanation. If your explanation is unsatisfactory, you will be given a grade of zero and reported to the College.