

PHYS451 - Quantum Mechanics

Fall 2015

Course Syllabus

Instructor: Dr. Justin Dressel (dressel@chapman.edu)

Time and Place: Mon/Wed 9:30-11:00am, Hashinger Science Center 110

Office Hours: After class and by appointment

Overview: Students study the fundamentals of quantum mechanics, its historical development, and its application. By the conclusion of the course, students should understand the basic principles of quantum mechanics and the limits they place on experimental precision. Students should also be able to apply quantum mechanics to solve simple problems including: free and bound eigenstates of Schrödinger's equation, double slit diffraction of particles, the spectrum and wave functions of bound states of an infinite potential well, a finite potential well, and a one dimensional harmonic oscillator.

Units: PHYS451 is a 3 unit course

Prerequisites: PHYS102 and PHYS202

Required Text: N/A

Course materials: All course materials will be made available by the instructor as paper copies or pdfs as needed. We will be drawing from the books: *Introductory Quantum Mechanics, 4th Edition* by Richard L. Liboff, *Quantum Theory* by David Bohm, and *Exploring the Quantum: Atoms, Cavities, and Photons* by Serge Haroche and Jean-Michel Raimond, and well as a collection of topical research articles.

Homework, Exams, and Grading: Homework will consist of written assignments, reading of a variety of source material, and preparations for in-class presentations. There will be no midterm exam. The final exam will consist of a more involved project that builds on the preceding homework assignments. Homework will count for 80% of the course grade, and the final project for 20%.

Collaboration Policy: I encourage you to discuss and study course material together. However, all work you submit for this course must be your own. Any incidents of academic misconduct will be dealt with severely in accordance with the Chapman University Academic Integrity policy (see below).

Diversity and Equity: Chapman University is committed to ensuring equality and valuing diversity. Students and professors are reminded to show respect at all times as outlined in Chapman's Harassment and Discrimination Policy: <http://tinyurl.com/CUHarassment-Discrimination>. Any violations of this policy should be discussed with the professor, the Dean of Students and/or otherwise reported in accordance with this policy.

Chapman University's Academic Integrity Policy: "Chapman University is a community of scholars that emphasizes the mutual responsibility of all members to seek knowledge honestly and in good faith. Students are responsible for doing their own work and academic dishonesty of any kind will be subject to sanction by the instructor/administrator and referral to the university Academic Integrity Committee, which may impose additional sanctions including expulsion. Please see the full description of Chapman University's policy on Academic Integrity at <http://www.chapman.edu/academics/academicintegrity/index.aspx>."

Chapman University's Students with Disabilities Policy: "In compliance with ADA guidelines, students who have any condition, either permanent or temporary, that might affect their ability to perform in this class are encouraged to contact the Disability Services Office. If you will need to utilize your approved accommodations in this class, please follow the proper notification procedure for informing your professor(s). This notification process must occur more than a week before any accommodation can be utilized. Please contact Disability Services at (714) 516-4520 or visit <http://www.chapman.edu/students/student-health-services/disability-services> if you have questions regarding this procedure or for information or to make an appointment to discuss and/or request potential accommodations based on documentation of your disability. Once formal approval of your need for an accommodation has been granted, you are encouraged to talk with your professor(s) about your accommodation options. The granting of any accommodation will not be retroactive and cannot jeopardize the academic standards or integrity of the course."