PHYS 633: Quantum Mechanics III (Spring 2019)

Instructor: Daniel A. Steck  
Office: 277 Willamette  
Phone: 346-5313  
email: dsteck@uoregon.edu  
Office hours: walk-in and by appointment (best to email first)  
Teaching Assistant: Wes Erickson  
office: WIL 272  
office hours: W 3-4p  
emental: wwe@uoregon.edu

Course home page:

http://atomoptics-nas.uoregon.edu/~dsteck/teaching/19spring/phys633

Schedule: TTh 10-11:50a, 318 Willamette  
Course reference number: 34836  
Credits: 4  
Prerequisites: none

Links: news, course notes, homework sets and keys.

Course overview

This course is a more-or-less standard introduction to quantum mechanics at the graduate level, one of the core components of your Ph.D. studies. This is the third of a 3-quarter sequence.

Text:

There is no required textbook for this course. I will provide my notes (either typed or handwritten, as time allows) for the course material as we go along.

Grades
The intent is for this to be a transitional class between core and advanced graduate courses, and as such will be a little less formal in terms of evaluation. Grades for the course will be based on homework and a final exam. (No midterm) The relative weights will be as follows:

- Homework: 60%
- Final exam: 40%

**Homework:** around 4-5 problem sets will be assigned during the term. These will be a bit longer and more substantial than in past terms.

**Final exam:** The final exam is will be by oral exams. These will be scheduled individually during finals week or the last week of class (as convenient for the class, to avoid conflicts with other exams).

**Pass/fail grading option:** Since this is a core graduate course, you should take the graded option.

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**Syllabus**

This is an incredibly **tentative** list of topics we will cover in this and the following course(s) in the sequence. Note that it is likely we won't get through all of this in one term.

1. Radial potentials, hydrogen atom (finishing up)
2. Time-independent perturbation theory
3. Time-dependent perturbation theory
4. Fermi Golden rule, decaying quantum systems
5. Generalized measurements, state discrimination
6. Path-integral quantization
7. Dissipation in quantum mechanics (?)
8. Resolvent operator, scattering theory (?)
9. Second quantization (?)