Course Syllabus

PHYS 633: Quantum Mechanics

Willamette 318
WF 12-1:50 PM
Spring 2018
Instructor: Spencer Chang

Office: Willamette Hall 462

Office Hours: In office (W 5-6pm, Th 10-11am) or by appointment. Feel free to come chat about the course, my research, or anything that interests you.

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Teaching Assistants: Mostafa El Demery

Course Description

This course is the final quarter of a three quarter sequence in graduate level quantum mechanics.

Learning Outcomes

Through this course, students will learn:

- How to use time independent perturbation techniques to perturbatively solve for eigenvectors/eigenvalues for modified Hamiltonians
- How Bell Inequalities can be used to test quantum mechanics against classical hidden variable theories
- How to apply time dependent perturbation techniques to physical systems of interest, such as radiative transitions in atomic levels
- How to predict scattering amplitudes and analyze physical consequences from their analytic structure

Text and other Course Requirements
The textbook for this course is “Principles of Quantum Mechanics” 2nd edition by R. Shankar. I also suggest “Modern Quantum Mechanics” by J. Sakurai.

**Workload and Grading Policy**

There will be homework assignments offered roughly weekly, with about nine total, including one during Dead Week. These will comprise 50% of your grade, with the lowest grade being dropped. Please let me know as soon as possible about any issues with turning in a homework on time. Late homework will not be accepted without prior arrangement. In addition, there is a midterm worth 20% and a final worth 30% of your grade. Your ultimate grade will be based on this composite score and I reserve the right to curve the grades if needed to generate a reasonable distribution, as well as the ability to improve your final grade to take into account improvement over the course (e.g. going from a B to a B+). Total work expected in a week will be about 2-3 hours of reading, 3-4 hours on the homework, and 3-4 hours of lecture.

**Course schedule and assignments**

We will cover roughly 1/2 chapter a week, see canvas course calendar pages for specific information on topics covered. Class will be primarily lecture based, but questions and discussion are highly encouraged. On average there will be about 80 minutes for each lecture, but we might use the full two hours (with a break) to make up or catch up.

**Collaboration Policy**

Discussion with classmates on homework is encouraged. However, students must submit their own work. The homework is essential to mastering the subject, thus it is more important to understand the methods than the final answers. Academic misconduct will not be tolerated. Please see the University Student Conduct Code ([http://conduct.uoregon.edu](http://conduct.uoregon.edu)) for more information.

**Electronics Policy**

Humans are terrible multi-taskers and thus, I encourage everybody to limit the use of technology in class to note taking and recording of lectures. Be aware of the distractions other uses have on your attention and those around you.

**Students with Disabilities**

Please arrange a meeting with me to discuss any aspects of the course which are barriers to your inclusion. All shared information will be kept confidential.

**Course Summary:**