Course Syllabus

PHYS 415: Quantum Mechanics

Zoom Lectures and Office Hours, Link in Canvas Zoom Meetings Tab

MW 4:15PM-5:45 PM

Winter 2021
Instructor: Spencer Chang

Office: Home
Office Hours: Tuesday 12-1 (https://uoregon.zoom.us/j/94065014953) and Friday 4-5 (https://uoregon.zoom.us/j/92186106650) via Zoom (links in Zoom meetings tab) or by appointment. Feel free to come talk about the course, work on homework problems, chat about my research or anything that interests you.

E-mail: chang2@uoregon.edu (mailto:chang2@uoregon.edu)
Teaching Assistant: Layne Bradshaw (layneb@uoregon.edu (mailto:layneb@uoregon.edu))

TA Office Hours: Tuesday 9-10 am via Zoom (https://uoregon.zoom.us/j/9295411646)

Course Description

This course is the second quarter of a three quarter sequence in undergraduate level quantum mechanics.

Learning Outcomes

Through this course, students will learn:
• How to treat spherically symmetric problems in quantum mechanics (in particular
  the Hydrogen atom), by using spherical coordinates and separation of variables
• How to utilize angular momentum states including spin and how to combine
  angular momentum states
• How to identify symmetries (e.g. translational, rotational, etc...) in quantum
  mechanics and determine their implications for conservation and representation
  of states

Text and other Course Requirements

The textbook for this course is "Introduction to Quantum Mechanics" 3rd edition by
Griffiths and Schroeter. Older editions are not guaranteed to have the same
content or homework questions. If you are interested in additional references for
further reading or alternative presentations, please let me know.

Workload and Grading Policy

There will be homework assignments offered roughly weekly, with about eight total,
including one due during Dead Week. These will comprise 60% of your grade and
the due date will be determined in class. For exams, there will be a final exam
worth 25% and based on the class preference there will be a midterm or a
presentation worth 15%. Your ultimate grade will be based on this composite score
and I reserve both the right to adjust this score by 5% to account for improvements
over the quarter as well as to curve the grades if needed to produce a distribution
that accurately reflects the performance of the class. In general, please let me
know as soon as possible about any issues with turning in a homework on time.
Due to remote teaching, assignment deadlines are flexible, however late
homework will not be accepted without prior arrangement. Total work
expected in a week will be 3 hours of reading, 3-6 hours on the homework, and 3
hours of lecture.

Course schedule
The plan is to cover most of chapters 4 and 6 of Griffiths. Class will be primarily lecture based, but questions and discussion are highly encouraged.

**Collaboration Policy**

Discussion with classmates on homework is encouraged and let me know if you would like help in facilitating study groups. However, students must submit their own work. The homework is essential to learning the subject, thus it is more important to understand the methods than the final answers. Use of online homework solutions and other academic misconduct will not be tolerated. Please see the University Student Conduct Code (http://conduct.uoregon.edu) for more information.

**Electronics Policy**

Humans are terrible multi-taskers and this is even more the case with remote teaching, I encourage everybody to limit the use of technology to streaming the lectures, note taking and recording of lectures. Using full screen for the Zoom lectures and turning off notifications can be helpful in focusing on the class.

**Class Environment**

Our aim is to make the classroom an inclusive environment where all are welcome to discuss and ask questions while maintaining proper respect for all participants. In particular, be conscious of the way we address each other and give space to others to be listened to and heard. Please see the UO physics department’s code of conduct (http://physics.uoregon.edu/physics-department-code-of-conduct) for more information.

**Accessibility**

If there are any potential issues, please let me know if there are anyways the course can be made more accessible.

**Student Input**

I welcome student input on all aspects of the course, including best practices for remote teaching, time spent in class (lecture, activities, Q&A), date and time of
Homework deadline, format of exams (open book vs. notes), and/or replacing an exam with a presentation/paper. Happy to receive this directly through email or Zoom. Also, anonymous surveys can be set up at any moment but will at least be done in the middle of the quarter to get your feedback.

## Course Summary:

<table>
<thead>
<tr>
<th>Date</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon Jan 4, 2021</td>
<td>PHYS 415 Class <a href="https://canvas.uoregon.edu/calendar?event_id=187390&amp;include_contexts=course_172642">link</a> 12pm to 1:20pm</td>
</tr>
<tr>
<td>Wed Jan 6, 2021</td>
<td>PHYS 415 Class <a href="https://canvas.uoregon.edu/calendar?event_id=187384&amp;include_contexts=course_172642">link</a> 12pm to 1:20pm</td>
</tr>
<tr>
<td>Mon Jan 11, 2021</td>
<td>PHYS 415 Class <a href="https://canvas.uoregon.edu/calendar?event_id=187371&amp;include_contexts=course_172642">link</a> 12pm to 1:20pm</td>
</tr>
<tr>
<td>Tue Jan 12, 2021</td>
<td>Homework 1 <a href="https://canvas.uoregon.edu/courses/172642/assignments/1011049">link</a> due by 5pm</td>
</tr>
<tr>
<td>Wed Jan 13, 2021</td>
<td>PHYS 415 Class <a href="https://canvas.uoregon.edu/calendar?event_id=187378&amp;include_contexts=course_172642">link</a> 12pm to 1:20pm</td>
</tr>
<tr>
<td>Mon Jan 18, 2021</td>
<td>PHYS 415 Class - NO Class for MLK Holiday <a href="https://canvas.uoregon.edu/calendar?event_id=187372&amp;include_contexts=course_172642">link</a> 12pm to 1:20pm</td>
</tr>
<tr>
<td>Tue Jan 19, 2021</td>
<td>Homework 2 <a href="https://canvas.uoregon.edu/courses/172642/assignments/1011050">link</a> due by 5pm</td>
</tr>
</tbody>
</table>