Physics 481 – Quantum Mechanics II – Syllabus[1]

Spring Semester 2022, University of Hawaii at Manoa
Class: Tue, Th, 12:00 am – 1:15 pm, in zoom
Recitation: not this semester

Instructor:	Prof. Sven E. Vahsen	Phone:	(808) 956 2985
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Office Hours:	t.b.d. via poll, tentatively Tuesdays	TA	n/a

Class will be in zoom

Announcements, homework assignment, homework submission: in google classroom

- Google classroom "Class code" – which you may need to join, is: vr6k5fn
- Zoom link which will be used for every class: *REDACTED*

Description in Course Catalog

Continuation of 480; atomic physics, scattering, perturbation theory. Prerequisite: Physics 480.

Course Description

Quantum mechanics got me excited about physics – and I hope to pass on this excitement to you. Quantum mechanics is required to understand phenomena at the atomic scale, and thus is at the heart of modern physics. Although I will do my best to elucidate the material, be warned that Quantum Mechanics can be both mathematically and conceptually difficult. The only way to become proficient is by solving a large number of problems, so expect to work hard. The intellectual rewards are however great.

In the precursor course Physics 480 we focused on the *postulates and formalism* of Quantum Mechanics. This semester, the focus will shift to common *applications* of Quantum Mechanics, and commonly used approximation methods

Prerequisites

Physics 480.

Required Materials

Textbook: *Quantum Mechanics, A Paradigms Approach* by David H. McIntyre.

[1] created 1/11/2022.

The class will also include material not in the main text book. You may benefit from also referencing other books. There are many books out there. I'd particularly recommend the book by Bransden & Joachain, which is also titled "Quantum Mechanics", Second Edition. Also check out "Introduction to Quantum Mechanics" by Griffiths, Second Edition or later.

Homework

Weekly, written homework and reading. Typically, due one week after assignment. Honest collaboration is encouraged, **but the material handed in must be your own work. Copying from a solutions manual is strictly prohibited.**

Evaluation – preliminary

Homework	(25%)
Midterm I (probably take-home)	(35%)
Midterm II **or** Final (t.b.d.) (probably take-home)	(35%)
Class participation and quizzes	(5%)

Course Outline

This course if part of a 1-year sequence (Physics 480 and 481) that will cover most of the material in the textbook by McIntyre. This semester, I plan to cover chapters 8 through 14, nominally using the schedule show on page xvii in the preface of the textbook, but I will adjust the pace as needed. I expect to substitute scattering and some particle physics for chapters 15 and 16. **I will distribution a list that shows the planned topic for every class of the semester.**