2014

376 Quantum Mechanics I

Steven Herbert

Quantum Mechanics I
PHYS 376

Monday, Wednesday, Friday 9:00-9:50 a.m.
Fall Semester, 2014

Instructor: Dr. Steve Herbert
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Office Hours: Fri. 1:00-3:00 p.m., and by appointment
- contact Izola White at 745-4286
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Text: *Introduction to Quantum Mechanics*, 2nd Ed., by David Griffiths

Reference Texts:
Quantum Mechanics, by Cohen-Tannoudji, Diu, and Laloë
Introduction to Quantum Mechanics, by Park
Quantum Physics, by Gasiorowicz
Quantum Mechanics, by Goswami
The Quantum Challenge, by Greenstein and Zajonc

The Course:

Since this is a senior level course, we will use a somewhat less formal teaching style, concentrating instead on cooperative investigation. We will cover material including basic formalism, the Schrödinger Wave Equation in one and three dimensions, and the Hydrogen atom. Much of the material will come from the book but will be supplemented form the reference texts.

I will be using elements of the flipped classroom style of learning wherein some content/class material will be delivered via video and other media and will be located on the Canvas-based course page. For the most part, with few exceptions, a short quiz will follow the flipped content. I will also have quizzes at random times to test for concept mastery.

Course Learning Goals:

Upon completion of this course, students will:

- Demonstrate an understanding of the fundamental assumptions, concepts, and mathematical techniques of introductory quantum theory, such as the wave function, quantum potentials, and the Schroedinger Wave Equation.
- Interpret abstract and mathematical models of physical quantum systems and draw inferences from them.
- Demonstrate an understanding of and comfort in using various methods of problem solving and display an ability to determine the correctness and/or reasonableness of their answers.
- Be able to effectively communicate the underlying physical and mathematical processes that undergird their answers.

Grading Policy:

Please see the department grading policy on the physics web site for details on the assignment of grades. Go to www.xavier.edu/physics and click on "About the Department" in the bar on the left hand side. The +/- grading scale will be used. Please see the grading distribution on the back of this page.

In the spirit of cooperative investigation, grading will be based largely on the homework. There will be a midterm and a final exam whose dates will be determined in consultation with the students. There will be quizzes as necessary to facilitate learning, and usually timed to follow the viewing of flipped content. The final grade will be determined as follows:

Homework:		50%
Griffiths HW	25%	
Assigned HW	25%	
Quizzes		10%
Midterm:		20%
Final exam:		20%

- Homework assignments must be turned in on time for credit to be given. Homework credit will be reduced by up to 50% for each week that the assignments are late.

- Exams must be taken when scheduled. Missed exams will count for zero credit. A legitimate written excuse must be provided before any make-up exam will be considered. In case of emergencies on or before the exam date, all reasonable attempts to contact me must be made.

- The final exam is cumulative but will concentrate on material since the first exam.

- Class attendance is expected.

Grading Scale

93 – 100	A
90 – 93	A–
87 – 90	B+
83 – 87	B
80 – 83	B–
77 – 80	C+
73 – 77	C
70 – 73	C–
67 – 70	D+
63 – 67	D
60 – 63	D–
Below 60	F