

Physics 350
Quantum Mechanics

Fall, 2013

Prerequisites:	Students must have taken and passed PHY212 - Modern Physics
Instructor:	Charles Benesh
Phone:	x5265
e-mail:	cbenesh@wesleyancollege.edu
Office Hours:	to be announced
Grading:	70% - 5 Exams 30% - Weekly Homework and Quizzes
Text:	<i>Introductory Quantum Mechanics</i> by Liboff, 4th edition

- **Exams:** Periodic exams will be given in class, per the attached schedule. The exams will consist of questions similar/related to the homework problems. Roughly half of the exam will consist of multiple choice/short answer problems, with the other half composed of “story” problems similar to those on the homework. Exams are closed book, but each student is allowed a single sheet(8 1/2 by 11) of formulas.

There will be three exams and a final given, with the final consisting of a regular hour exam plus a conceptual test of topics covered during the semester. For each student, the lowest of the 5 test scores will be replaced by the average of the other four. Zeroes may not be dropped.

- **Lecture Attendance:** Regular attendance in class is both expected and recommended. Generally, quizzes are only given when attendance falls below 70%. Therefore, the day you don’t show up is more likely to have a quiz.....

- **Quizzes:** I reserve the right to give unannounced in class quizzes which will count towards the homework portion of your grade. No makeup quizzes will be given.
- **Homework:** Homework will be due on Fridays, at 5 pm. A correct solution to a homework problem will consist of *all* of the following:
 - 1. A picture that summarizes and represents the problem, including relevant physical information. Depending on the nature of the problem, this may include “physics pictures” such as free body diagrams, motion diagrams, or circuit diagrams.
 - 2. A sentence or two describing why you chose to use those equations in this particular problem. (i.e. what were the keywords in the description of the problem that told you those equations were applicable? What physical principles are you trying to apply?)
 - 3. Correct use of the equations describing the physical situation to extract the correct answer.
- **Late Homework:** Due to time constraints, I cannot grade more than one late assignment or lab report per student per week, including Finals week. (Note that Makeup Labs are not considered late until one week after the lab is made up.) In particular, this means that only one late assignment will be graded during the last week of classes and Finals Week.

Class Schedule - Quantum Mechanics

Jan 18	Review of Classical Mechanics READ: Chapter 1
Jan 21	NO CLASS
25	The Postulates of Quantum Mechanics-Quantum Measurement Theory READ: Chapter 2
Jan 28	Wavefunctions
Feb 1	Eigenfunctions & Eigenvalues READ: Chapter 3
Feb 4	The Schroedinger Equation
8	The Correspondence Principle READ: Chapter 4
Feb 11	Dirac Notation, Hilbert Space
15	Exam I - Chapters 1-3 READ: Chapter 4
Feb 18	Hermitian Operators
22	The Superposition Principle Commutators READ: Chapter 5
Feb 25	The Uncertainty Principle
Mar 1	Time Dependence of Wavefunctions READ: Chapter 6
Mar 4	Ehrenfest's Theorem - Conservation Laws
15	Exam II READ: Chapter 6
Mar 11-15	NO LASS

Mar 18 22	The Harmonic Oscillator Unbound State READ: Chapter 7
Mar 25 29	Wave Packets NO CLASS READ: Chapter 8
Apr 1 5	Two Dimensional Problems Angular Momentum READ: Chapter 8
Apr 8 12	Spherical Harmonics Exam III READ: Chapter 9
Apr 15 19	Addition of Angular Momentum Problems in Three Dimensions READ: Chapter 10
Apr 22 26	The Hydrogen Atom Matrix Mechanics READ: None
Apr 29 May 1	Spin Total Angular Momentum
May 6(2:15)	Final Exam