PHYSICS 5383

Introduction to Quantum Mechanics

SPRING 2018

INSTRUCTOR Roberto Vega
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TEXT *Introduction to Quantum Mechanics* by David Griffith, 2nd edition.

GRADING The final course grade will be determined as follows. Homework 50%, exams 25%, final exam 25%. Exams dates as in syllabus.

HOMEWORK Although homework is graded you are encouraged to help each other out and discuss the problems among yourselves. However, everyone should do their write-up individually. You will learn physics more effectively through discussion. Late homework will be subject to a 3 percentage point penalty for each day late.

Objectives:

The overall objective of the course is to provide a general introduction to the basic principles of quantum mechanics. This includes the discussion of approximation methods to analyze more realistic problems in Quantum Mechanics. The emphasis of this second part of the introductory course will be on applications of the basic principles. Please see syllabus for detail schedule.

Learning Outcomes:

Upon completion of this course students shoud able to:

- have a good understanding of the principles of Quantum Mechanics
- determine when to use, and how to apply, approximation methods to solve the Schrodinger equation in one, two, or three dimensions for simple potentials.
- use the Born approximation to compute a cross section for scattering off a simple potential.

The Usual Disclaimers

- Disability Accommodations: Students needing academic accommodations for a disability must first register with Disability Accommodations & Success Strategies (DASS). Students can call 214-768-1470 or visit http://www.smu.edu/Provost/ALEC/DASS to begin the process. Once registered, students should then schedule an appointment with the professor as early in the semester as possible, present a DASS Accommodation Letter, and make appropriate arrangements. Please note that accommodations are not retroactive and require advance notice to implement.

- Religious Observance: Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (See University Policy No. 1.9.)

- Excused Absences for University Extracurricular Activities: Students participating in an officially sanctioned, scheduled University extracurricular activity should be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (University Undergraduate Catalogue)

- Final Exams: Final course examinations shall be given in all courses where they are appropriate, and some form of final assessment is essential. Final exams or final assessments must be administered as specified in the official examination schedule, and shall not be administered during the last week of classes or during the Reading Period. Please state clearly in the syllabus the date/time and form of the final exam or assessment.

Physics 5383, Qunatum Mechanics
Course Syllabus
Spring 2018

	Date	Lecture Topic	Text Reading	Homework
1	1/23	Review. Two State Systems	Class Notes	
2	1/25	Solids and Periodic Potentials	5.3	
3	1/30			
4	2/1			
5	2/6	Q. Statistical Mechanics	5.4	
6	2/8			
7	2/13	Pertubation Theory	Chapter 6	
8	2/15			
9	2/20			
10	2/22			
11	2/27	Variational Principle	Chapter 7	
12	3/1			
13	3/6	WKB Approximation	Chapter 8	
14	3/8	EXAM I		
15	3/13	SPRING BREAK		
16	3/15			
17	3/20	Time Dependent Pertubation Theory	Chapter 9	
18	3/22			
19	3/27			
20	3/29			
21	4/3			
22	4/5	The Adiabatic Approx.	Chapter 10	
23	4/10			
24	4/12	Scattering	Chapter 11	
25	4/17			
26	4/19			
27	4/24			
28	4/26	EXAM II		
29	5/1	EPR and Bell's Theorem	Chapter 12	
30	5/3			
31				
FINAL EXAM: Thursday 10 May 2017, 8-11 am				