

Introductory Quantum Mechanics (Spring 2007)

April 24, 2007

Day	Date	Topics	Reading	Homework Due
Thu	18 Jan	Review: <i>Quantum Physics</i> and <i>Wave Mechanics</i>		—————
Mon	22 Jan	Measuring “spin”; The quantum state vector	Chap.1	—————
Thu	25 Jan	Kets, bras, and operators; Representations	Chap.2	1.4, 1.5, 1.8
Mon	29 Jan	Rotations, commutation, and angular momentum	§3.1 thru 3.4	—————
Thu	1 Feb	Uncertainty relations; Spin-1/2 and spin-1	§3.5 thru 3.8	2.4, 2.5, 2.6, 2.7
Mon	5 Feb	Dynamics: Time translation and the Hamiltonian	§4.1 and 4.2	—————
Thu	8 Feb	Precession of spin-1/2; Magnetic resonance	§4.3 and 4.4	3.5, 3.9, 3.10, 3.12
Mon	12 Feb	Dynamics of two-state systems; Energy & time uncertainty	§4.5 thru 4.7	4.8
Thu	15 Feb	Midterm Exam #1 (Through Chapter 4)		
<i>Tue</i>	20 Feb	Adding angular momenta in quantum mechanics	§5.1 thru 5.3	—————
Thu	22 Feb	Wave mechanics from quantum mechanics; The Dirac delta function	§6.1 thru 6.8; App.C	5.2, 5.5, 5.7
Mon	26 Feb	The harmonic oscillator; Raising and lowering operators	§7.1 thru 7.5	—————
Thu	1 Mar	Wave functions in position space; Generating functions	§7.6 thru 7.11	6.2, 6.10, 6.12
	5-9 Mar	Spring Break		
Mon	12 Mar	Wave mechanics in three dimensions	§9.1 thru 9.4	—————
Thu	15 Mar	Orbital angular momentum	§9.5 thru 9.10	7.6, 9.4, 9.9
Mon	19 Mar	Bound states of central potentials; The hydrogen atom	§10.1 and 10.2	—————
Thu	22 Mar	Finite and infinite spherical wells; The 3D harmonic oscillator	§10.3 thru 10.6	9.15, 9.18, 10.4, 10.6
Mon	26 Mar	Time-independent perturbation theory; Examples	§11.1 and 11.2	10.17
Thu	29 Mar	Midterm Exam #2 (Through Chapter 10)		
Mon	2 Apr	Degenerate perturbation theory; The Stark Effect	§11.3 and 11.4	—————
Thu	5 Apr	Review; Relativity and the Hydrogen atom	§11.6	11.1, 11.3, 11.9
Mon	9 Apr	Spin-orbit coupling and the Hydrogen atom	§11.6	—————
Thu	12 Apr	Realistic one-electron atoms; The Zeeman Effect	§11.7 thru 11.9	11.7, 11.12, 11.16
Mon	16 Apr	Identical particles; The helium atom	§12.1 and 12.2	—————
Thu	19 Apr	Chemistry	§12.3 and 12.4	11.14, 12.4
Mon	23 Apr	Introduction to scattering theory	§13.1 and 13.2	12.3
Thu	26 Apr	Midterm Exam #3 (Through Chapter 12, except Chapter 8)		
Mon	30 Apr	The Born approximation	§13.2 and 13.3	13.6