

Lecture Schedule Fall 2011

Lecture	Date	McQuarrie	Topic
1	09/07	Chapter 1.1-1.9	Historical development
2	09/09	Chapter 5.1-5.3	Failures of Classical Mechanics
3	09/12	(Math Chapt A)	Pre-lab lecture: Organic Solar Cells
4	09/14		The Atom of Niels Bohr
5	09/16	Chapter 1.10-1.14	Wave nature, de Broglie, Uncertainty principle
6	09/19	Chapter 2	Classical wave equation
7	09/21	Chapter 3	Stationary waves, Schrödinger equation,
8	09/23	(Math Chapt B)	Probabilities and Normalization
9	09/26	Chapter 3	Particle in a box
10	09/28		More on Particles, Expectation Values
11	09/30	Chapter 4.4	Operators and Commutators
12	10/3	Chapter 4.1-4.3	Operators and Commutators
13	10/5	Chapter 4.4-4.7	Postulates of quantum mechanics I
14	10/7		Postulates of quantum mechanics II
			FIRST EXAM – hand out 10/7; due 10/12
10/10			No Class
15	10/12	Chapter 5	Classical harmonic oscillator
16	10/14		Quantum harmonic oscillator
17	10/17	Chapter 5	Quantum H.O. and Energy Levels
18	10/19		Anharmonicity, Vibrational Spectra
19	10/21		Hermite Polynomials
20	10/24	Chapter 6	Rigid Rotor
21	10/26	(Math Capt E)	Rotation and Ro-Vibrational Transitions
			SECOND EXAM – hand out 10/26; due 10/28
22	10/28		Spherical harmonics, Angular Momentum
23	10/31	Chapter 7.1-7.3	Hydrogen atom I
24	11/02	(Math Chapt F)	Hydrogen atom II
25	11/04	Chapter 8.1-8.2	Variation principle
26	11/07	Chapter 8.4-8.6	Perturbation theory
27	11/09	Chapter 9.1-4	Helium atom
28	11/11		Hartree-Fock, SCF
29	11/14	Chapter 7.5	Electron spin
30	11/16		Pauli principle
			THIRD EXAM – hand out 11/16; due 10/18
31	11/18	Ch 10.1-5	Born-Oppenheimer approximation
11/21-25			No Classes
32	11/28		Molecular orbital theory, H ₂ ⁺
33	11/30		LCAO-MO Theory
34	12/02	Chapter 11	LCAO-MO Theory
35	12/05	Chapter 11	Qualitative Molecular Orbital Theory
36	12/07		Huckel MO Theory, polyatomic
37	12/09		Electronic Transitions
30	12/12		Electronic Spectroscopy
31	12/14		Electron Transfer Theory