

Fall 2009 General Chemistry I Syllabus

- Three lessons (four lecture hours) per week + one recitation session per week
- 38 lectures, three tests, and one review lesson
- Dates reflect M, T, R lecture days for Fall 2009 semester

Course Texts: *Chemical Principles: The Quest for Insight, 4th Ed, Atkins & Jones, 2008*

<u>Lecture Date</u>	<u>Topic Examined (Self Tests to Pre-Learn)</u>	<u>Text Sections (HW Problems)</u>
L1 8/25	Matter and Energy (A1-A5)	A.1-A.3 (13,21,22,25,27,29,33)
L2 8/27	EMR and Atomic Spectra (1-2)	1.1-1.3 (3,4,5,6)
L3 8/31	Radiation, Photon Energies, and Photoelectric Effect (3-6)	1.4-1.5 (7,9,11,15,17)
L4 9/1	Wavefunctions & Energy Levels (1.7-1.8)	1.7 (21,109,114a)
L5 9/3	The Hydrogen Atom (9-10)	1.8-1.11 (31,33,49,59)
L6 9/7	Many-Electron Atoms (11-12)	1.12-1.14 (63,69,71,75,79)
L7 9/8	Periodicity of Atomic Properties (13-15)	1.15-1.22,2.12 (85,87,91,93,99,100)
L8 9/10	Ionic and Covalent Bonds (1-6)	2.1-2.6 (1,3,9,19,29,33,35)
L9 9/14	<u>Lewis Structures</u> and Bond Lengths (7-12)	2.7-2.16 (41,45,49,63,73,77)
L10 9/15	Molecular Structure and Shape (1-9)	3.1-3.7 (9,11,25,33,35,41)
L11 9/17	MO Theory and Band Structure (10-12)	3.8-3.14 (49,51,55,65,67)
L12 9/21	Intermolecular Forces and Liquids (1-2)	5.1-5.7 (1,3,7,11,13,17,21,23,28)
Test 1 9/22	Chapters 1-3	
L13 9/24	Solids (4-7)	5.8-5.17 (31,33,39,49,63)
L14 9/28	Systems, States, and Energies (1-6)	6.1-6.7 (3,7,17,21)
L15 9/29	Enthalpy (7-8)	6.8-6.12 (25,31,35,39)
L16 10/1	The Enthalpy of Chemical Change (9-19)	6.13-6.21 (45,67,73,85)
L17 10/5	Entropy (1-13)	7.1-7.8 (1,3,7,11,15,23,25)
L18 10/6	Global Changes in Entropy (14-17)	7.9-7.11 (41,45)
L19 10/8	Gibbs Free Energy (18-23)	7.12-7.16 (51,53,63,65)
L20 10/12	Phases and Phase Transitions (1-6)	8.1-8.7 (1,5,7,9)
L21 10/13	Solubility (7)	8.8-8.13 (19,25,27,31)
L22 10/15	Colligative Properties (8-17)	8.14-8.22 (35,47,53,65,71)

L23 10/22	Reactions at Equilibrium ()	9.1-9.5 ()
L24 10/26	Equilibrium Calculations ()	9.6-9.8 ()
L25 10/27	Equilibrium Response to Changes ()	9.9-9.13 ()
Test 2 10/29	Chapters 5-9	
L26 11/2	The Nature of Acids and Bases ()	10.1-10.6 ()
L27 11/3	Weak Acids and Bases ()	10.7-10.10 ()
L28 11/5	Mixed Solutions and Buffers ()	11.1-11.3 ()
L29 11/9	Acid Base Titrations ()	11.4-11.6 ()
L30 11/10	Redox Reactions ()	K.1-K.4, 12.1-12.2 ()
L31 11/12	Galvanic Cells ()	12.3-12.8 ()
L32 11/16	Nernst Equation and Electrolysis ()	12.9-12.12 ()
L33 11/17	Coordination Compounds ()	16.5-16.7 ()
L34 11/19	Electronic Structure of Complexes ()	16.8-16.12 ()
L35 11/23	Reaction Rates ()	13.1-13.3 ()
L36 11/24	Reaction Concentrations and Time ()	13.4-13.6, 17.7 ()
L37 11/30	Reaction Mechanisms ()	13.7-13.10 ()
L38 12/1	Models of Reactions and Catalysis ()	13.11-13.14 ()
Test 3 12/3	Chapters 10, 11, 12, 16, 13	
Review 12/7	Chapters ()	
Final Exam 12/	AM Sims105	

Assigned Problem Sets:

PS-1:

