

**COLLEGE CHEMISTRY I CHM 1045 Fall 2004 Dr. Grow**

<b>Date</b>	<b>Subjects Covered and <i>Optional Thinkwell CD Lectures</i></b>	<b>Chapter</b>
08/23	Introduction, The Nature of Matter..... <i>Disc 1 – Introduction to Chemistry, States of Matter, Properties of Matter</i>	1
08/25	Metric System..... <i>Disc 1 – Measurement of Matter</i>	1
08/27	Significant Figures, Scientific Notation..... <i>Disc 1 – Significant Figures, Precision and Accuracy</i>	1
08/30	Significant Figures, Scientific Notation..... <i>Disc 1 – Scientific Notation</i>	1
09/01	Temperature and Derived Units..... <i>Disc 1 – Measurement of Matter</i>	1
09/03	Factor Label Method for Dimensional Analysis..... <i>Disc 1 – Dimensional Analysis</i>	1
09/08	Atomic Theory..... <i>Disc 1 – Early Discovery of the Atom, Understanding Electrons, Understanding the Nucleus, Modern Atomic Structure</i>	2
09/10	Atomic Mass and The Periodic Table..... <i>Disc 1 – Mass Spectrometry: Determining Atomic Masses, Creating the Periodic Table</i>	2
09/13	Molecules and Ions, Formulas and Names..... <i>Disc 1 – Describing Chemical Formulas</i>	2
10/04	Nomenclature..... <i>Disc 1 – Naming Chemical Compounds</i>	2
10/06	Nomenclature..... <i>Disc 1 – Naming Chemical Compound, Organic Chemical Nomenclature</i>	2
Online**	Chemical Reactions and Equations..... <i>Disc 1 – An Introduction to Chemical Reactions and Equations</i>	3
10/08	Mass and Moles..... <i>Disc 1 – The Mole and Avagadro’s Number, Introducing Conversions of Masses, Moles, and the Number of Particles</i>	3
10/11	<b>Exam 1 - Chapters 1,2</b>	
10/13	Percent Composition..... <i>Disc 1 – Finding Empirical and Molecular Formulas</i>	3
10/15	Empirical Formulas..... <i>Disc 1 – Finding Empirical and Molecular Formulas</i>	3
10/18	Stoichiometry..... <i>Disc 1 – Stoichiometry and Chemical Equations</i>	3

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10/20	Stoichiometry and Limiting Reagents ..... <i>Disc 1 – Stoichiometry and Chemical Equations</i>	3
10/22	Limiting Reagents ..... <i>Disc 1 – Finding Limiting Reagents, Theoretical and Percent Yields</i>	3
Online**	Aqueous Reaction Types ..... <i>Disc 2 – Precipitation Reactions, Acid-Base Reactions, Oxidation-Reduction Reactions</i>	4
10/25	Solutions, Concentration, and Dilution ..... <i>Disc 1 – Properties of Solutions, Concentrations of Solutions, (2) Factors Determining Solubility</i>	4
10/27	Solution Reactions ..... <i>Disc 2 – Acid-Base Titrations, Solving Titrations Problems, Gravimetric Analysis</i>	4
10/29	Solution Stoichiometry and Chemical Analysis ..... <i>Disc 2 – Acid-Base Titrations, Solving Titrations Problems, Gravimetric Analysis</i>	4
11/01	Quantitative Analysis and Stoichiometry Review ..... <i>Disc 1 – Problem Using Combined Concepts of Stoichiometry</i>	4
Online**	Gas Pressure ..... <i>Disc 2 – Properties of Gases</i>	10
11/03	Empirical Gas Laws and the Combined Gas Equation ..... <i>Disc 2 – Boyles Law, Charles Law, Combined Gas Law</i>	10
11/05	<b>Exam 2 - Chapters 3 and 4</b>	
11/08	Gas Laws and the Ideal Gas Law ..... <i>Disc 2- Avagadro's Law, Ideal Gas Law</i>	10
Online**	Law of Partial Pressures, Vapor Pressure ..... <i>Disc 2 – Partial Pressure and Dalton's Law, Applications of the Gas Laws</i>	10
11/10	Real Gases and the van der Waal's Equation ..... <i>Disc 2 – The Kinetic Molecular Theory of Gases, Molecular Speeds, Effusion and Diffusion, Comparing Real and Ideal Gases</i>	10
Online**	Energy in Chemical Reactions ..... <i>Disc 2 – The Nature of Energy, The 1<sup>st</sup> Law of Thermodynamics, Work, Heat</i>	5
11/12	Hess's Law ..... <i>Disc 2 – Heats of Reaction: Enthalpy, Constant Pressure Calorimetry, Bomb Calorimetry, Hess's Law</i>	5

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Online**	Enthalpies of Formation ..... <i>Disc 2 – Enthalpies of Formation</i>	5
Online**	Nature of Light..... <i>Disc 2 – The Wave Nature of Light, Absorption and Emmission</i>	6
11/15	Atomic Spectra and the Bohr Model of Electrons ..... <i>Disc 3 – The Ultraviolet Catastrophe, The Photoelectric Effect, The Bohr Model</i>	6
11/17	<b>Exam 3 - Chapters 5 and 10</b>	
11/19	The Quantum Model and Orbitals ..... <i>Disc 3 – The Heisenberg Uncertainty Principle, The Wave Nature of Matter, Radial Solutions to the Schrodinger Equation, Angular Solutions to the Schrodinger Equation, Atomic Orbital Size, Atomic Orbital Shapes and Quantum Numbers, Atomic Orbital Energy, Understanding Electron Spin, Electron Shielding</i>	6
11/22	Electron Configuration ..... <i>Disc 3 – Electron Configurations Through Neon, Electron Configurations Beyond Neon</i>	6
Online**	Periodic Properties of the Elements..... <i>Disc 3 – Periodicity and Atomic Size, Ionization Energy, Electron Affinity, Introduction to Electronegativity, Hydrogen, Alkali Metals, and Alkali Earth Metals, Transition Metals and Non-Metals</i>	7
11/24	Chemical Bonding, Covalent Bonds..... <i>Disc 3 – Valence Electrons and Chemical Bonding, Ionic Bonds</i>	8
Online**	Lewis Diagrams ..... <i>Disc 3 – Lewis Dot Structures for Covalent Bonds, Predicting Lewis Dot Structures</i>	8
11/29	<b>Exam 4 - Chapters 6 and 7</b>	
12/01	Lewis Diagrams ..... <i>Disc 3 – Resonance Structures, Formal Charges, Electronegativity Formal Charge and Resonance, Bond Properties (4), Using Bond Dissociation Energies (4)</i>	8
12/03	Molecular Shapes and VESPR ..... <i>Disc 4 – Valence Shell Electron Pair Repulsion Theory, Molecular Shapes for Steric Numbers 2-4, Molecular Shapes for Steric Numbers 5 &amp; 6, Predicting Molecular Characteristics Using VSEPR Theory</i>	9
12/06	Hybridization and Molecular Orbital Theory ..... <i>Disc 4 – Valence Bond Theory, Introduction to Hybrid Orbitals, Pi Orbitals, Molecular Orbital Theory, Applications of Molecular Orbital Theory, Beyond Homonuclear Dynamics</i>	9

**Final Exam 11AM Class – 11AM - Monday 12/13 AND 11AM Monday 12/15**  
**The exam is in two parts. You must take both parts.**