Textbook: *Conceptual Chemistry 2nd Edition*, John Suchocki, Pearson, 2004

Grade Determination:

Semester Grade: Tests = 75 %; Classwork (Homework and Labs) = 25 %; Participation = Extra Credit

Final Grade: 0.40 × (Semester 1 + Semester 2) + 0.20 × Final Exam (Cumulative)

First Semester

Chapter	Topic
1.1-1.5, 1.8	**I. Topic 1: Introduction** **A. Topic 1A: Scientific Method and Measurement** 1. Scientific method 2. Lab safety 3. Factor label (unit analysis) 4. Metric units and prefixes 5. Scientific notation
2.1-2.5	**B. Topic 1B: Matter** 1. Nature of matter 2. Elements and their symbols 3. Comparing compounds and mixtures 4. Types of mixtures
3, 5.1-5.7	**II. Topic 2: Atomic Structure** A. Greek philosophy - Democritus vs. Aristotle B. Atomic models 1. Daton 2. Thomson 3. Rutherford 4. Bohr 5. Quantum mechanical C. Major subatomic particles D. Drawing atomic diagrams 1. Bohr-Rutherford 2. Electron dot
2.6, 5.8	**III. Topic 3: Periodic Table** A. Historical development 1. Menedeleev 2. Moseley B. Reading the Periodic Table C. Trends in the Periodic Table D. Families on the Periodic Table

Chapter	Topic
6	**IV. Topic 4: Bonding** A. The nature of bonding B. Ionic bonds 1. determining the charge on an ion C. Covalent bonds D. Determining bond type E. Polar molecules - bonding and symmetry F. Interpreting chemical formulas G. Cross-over rule H. Writing formulas and naming compounds 1. Stock system 2. Determining the charge on the metal ion 3. Binary covalent I. Metallic bonding J. Intermolecular forces K. Comparing ionic and covalent substances

Second Semester

9.1-9.2	**V. Topic 5: Formulas and Equations** A. Determining formula mass B. Empirical formulas C. Percent composition D. Recognizing chemical changes E. Writing chemical equations F. Reaction types 1. synthesis 2. decomposition 3. single replacement 4. double replacement G. Conservation of mass H. Balancing equations I. Moles J. Mole ratios
1.7, 8	**VI. Topic 6: Phases of Matter** A. Heat and specific heat B. Kelvin scale C. Comparing solids, liquids, and gases D. Phase changes 1. Kinetic molecular theory 2. Heating curve 3. Vapor pressure E. The combined gas law
9.3-9.6	**VII. Topic 7:Kinetics and Equilibrium** A. Collision theory B. Transition state theory - activated complex C. Reaction coordinate (ΔH) D. Entropy (ΔS) E. Rate of chemical reactions F. Factors influencing equilibrium G. Le Chaltelier's principle

Chapter	Topic
7.1-7.3	**VIII. Topic 8: Solutions** A. Factors that influence solubility B. Saturation C. Concentration D. Molarity E. Colligative properties
10	**IX. Topic 9: Acids and Bases*** A. Hydrolysis of water B. Properties of acids and bases C. pH D. Neutralization E. Titration F. Naming acids and bases
11	**X. Topic 10: Electrochemistry*** A. Nature of oxidation and reduction B. Determining what is oxidized and what is reduced C. Writing half reactions D. Using the activity series E. Voltaic cells F. Electrolytic cells
12	**XI. Topic 11: Organic Chemistry*** A. Comparison of organic and inorganic compounds B. Hydrocarbons and homologous series C. Isomerism D. Substituted hydrocarbons E. Reactions of organic compounds
4	**XII. Topic 12: Nuclear Chemistry*** A. Nuclear particles; isotopes B. Nuclear equations C. Natural radioactivity; radioactive decay D. Detection and measurement of radioactivity; half-life E. Uses of radioisotopes F. Induced nuclear reactions: fission and fusion

* Topics usually not covered due to time constraints