Prep Chemistry Syllabus  
Fall 2007 – Spring 2008

Instructor: Ms. Jay Phillips  
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Textbook:  

Classroom Rules and Expectations

1) You are expected to bring the following to every class:
   - Pens/pencils
   - Paper/notebook
   - Scientific calculator

2) Warm ups for the week are due EVERY FRIDAY. They will be accepted on the first day of your return to the class ONLY IF YOU HAD AN EXCUSED ABSENCE FOR THE PREVIOUS FRIDAY. You will not be held responsible for the warm ups from the day of your absence.

3) It is YOUR responsibility to obtain notes and assignments from your classmate(s) for any classes missed. It is also YOUR responsibility to ask me for any missed handouts or worksheets.

4) Arrangements to make up any missed quizzes or tests due to excused absences MUST BE made with me on the first day of your return to the class. Failure to do so will result in not being able to make up the quiz/test.

5) There would be ABSOLUTELY NO TALKING ALLOWED during any quizzes or tests. Talking for any reason during examination will automatically result in ZERO for the quiz/test.

6) Any assignments, quizzes or tests submitted without a name will not be given any credit.

Grading Policy

Major Grades (60%): Tests, Major Labs, Lab Practicals, Article Reviews  
Minor Grades (40%): Quizzes, Homework, Warm-up, Lab Activities, Participation
Course Objectives (Tenative)

Fall Semester

First Six Weeks
I. Introductory Concepts
   a. Safety
   b. Scientific measurement
   c. Accuracy and precision
   d. Observations vs. interpretations
   e. Matter, change and energy
   f. Classification of matter
   g. Conservation laws
   h. First law of thermodynamics

II. Structure of Matter
   a. Atomic theory and atomic structure
   b. Quantum mechanical model
   c. Chemical periodicity

Second Six Weeks
III. Chemical Bonding
   a. Bonding forces
   b. Polarity of bonds; electronegativity
   c. Bonding models
   d. Lewis structure
   e. Molecular polarity
   f. Isomers

IV. Chemical Nomenclature and Chemical Equations
   a. Writing chemical formulas using ionic charges
   b. Naming and writing formulas for ionic compounds
   c. Naming and writing formulas for acids
   d. Balancing chemical equations
   e. Identifying and predicting products of chemical reactions
   f. Types of chemical reactions
   g. Net ionic equations
   h. Solubility rules

Third Six Weeks
V. Stoichiometry
   a. Calculations of molar mass
   b. Mole conversions with molar mass, Avogadro’s number
   c. Percent composition
   d. Empirical and molecular formula calculations
   e. Mass-mass, Mass-volume, volume-volume calculations
   f. Percent yield
   g. Limiting reagent

VI. States of Matter
   a. Gases and Gas laws
   b. Liquids
   c. Solids
   d. Phase changes and Phase Diagrams
Spring Semester

Fourth Six Weeks
VII. Solutions
   a. Properties of water
   b. Aqueous solutions and dissolving process
   c. Electrolytes and non-electrolytes
   d. Solubility graphs
   e. Concentration calculations
   f. Colligative properties

VIII. Equilibrium
   a. Le Chatelier’s principle
   b. Ionization of water - \( K_w \)

Fifth Six Weeks
IX. Acids and Bases
   a. Properties of acids and bases
   b. Acid/base theories
   c. Strength of acids and bases
   d. Equilibrium
   e. Relationships between pH and pOH
   f. Buffers
   g. Titration curves and calculations

X. Thermodynamics
   a. Thermochemical equations and calculations
   b. Enthalpy
   c. Hess’ Law
   d. Calorimetry
   e. Bond energy
   f. Entropy
   g. Gibb’s Free Energy

Sixth Six Weeks
XI. Kinetics
   a. Rate of reaction
   b. Rate and order of reaction
   c. Activation energy
   d. Catalyst

XII. Redox Reactions
   a. Oxidation numbers
   b. Balancing Redox reactions
   c. Electrochemistry

XIII. Organic Chemistry
   a. Organic molecules
   b. Polymers