AP Chemistry Course Information 2016-2017

Textbooks: Brown and LeMay
You may sign out a textbook for the summer.

Expectations: This course is taught as a college-level class.
You are expected to:

- take the AP exam in May. (Students not taking the AP exam for your course will take a teacher made exam that counts towards their 4th quarter grade)
- have strong algebra and pre-calculus, or calculus, math skills.
- work and study independently.

Materials: Bound marble composition notebook and graphing calculator.

Exam Info: For specific information about the exam go to www.collegeboard.com
Look under the Student tab and search for chemistry.

Contact Us: You can reach us by e-mail. Please place your name and AP Chemistry in the subject line of the email.

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Suggested
Summer Work: Read Chapters 1-4, 10 to review content covered in GT chemistry
Begin memorizing Cation/Anions, Solubility Rules and the 6 Strong Acids
Complete practice problems from Chapter 1-4, 10 to review GT content
Note: Practice problems will not be collected for a grade.
Practice Problems can be found at the end of each chapter

Ch 1 Introduction: Matter and Measurement

Classification and Properties of Matter	9, 10, 17, 18, 19
Units and Measurement	33
Uncertainty in Measurement	37, 41, 42
Dimensional Analysis	47, 51

Ch 2 Atoms, Molecules, and Ions

Visualizing Concepts	5, 6
Atomic Theory and the Discovery of Atomic Structure	9
Modern View of Atomic Structure; Atomic Weights	23
The Periodic Table; Molecules and Ions	41-45, 47, 53, 55
Naming Inorganic Compounds; Organic Molecules	59, 61, 63, 65, 67, 69

Ch 3 Stoichiometry: Calculation with Chemical Formulas and Equations

Balancing Equations	11, 13
Patterns of Chemical Reactivity	15-20
Formula Weights	21, 23
Avogadro's Number and the Mole	33, 35, 37
Empirical Formulas	43, 45, 49, 53
Calculations Based On Chemical Equations	57, 61
Limiting Reactants; Theoretical Yields	71, 75, 79

Ch 4 Aqueous Reactions and Solution Stoichiometry

Visualizing Concepts	7
Electrolytes	15, 18
Precipitation Reactions and Net Ionic Equations	19-28
Acid-Base Reactions	31, 33, 35, 37, 39, 41, 43
Solution Composition; Molarity	61, 63, 65, 67, 69, 71, 74
Solution Stoichiometry; Titrations	77, 79, 81

Ch 10 Gases

Gas Characteristics; Pressure	10, 17, 21, 22
The Gas Laws	24, 26
The Ideal-Gas Equation	28, 30, 31, 33, 37, 39
Further Applications of the Ideal-Gas Equation	47, 49, 53
Partial Pressures	59, 61, 65
Kinetic-Molecular Theory; Graham's Law	69, 70, 73, 75, 77, 78
Non-Ideal Gas Behavior	81, 82, 85

Course Outline

1. Review of Chem. 1 (ch. 1,2,3,4,10)
   - nomenclature
   - stoichiometry
   - gases

2. Equilibrium (ch. 15, 17)
   - K_{eq}
   - LeChatelier's Principle

3. Thermochem/Thermodynamics (ch. 5, 19)
   - calorimetry
   - enthalpy and Hess's Law
   - entropy
   - Gibbs free energy

4. Atomic Structure and Periodicity (ch. 7)
   - atomic spectra
   - quantum mechanics
   - periodicity

5. Bonding and Coordination Chemistry (ch. 6, 8, 9)
   * ionic and covalent bonding
   * VSEPR theory
   * electron domain vs molecular geometry
   * hybridization
   * complex ions

6. Organic Chemistry (ch. 12, 26)
   * alkanes
   * alkenes
   * alkynes
   * basic organic reactions

7. Types of Reactions
   * basic reaction types
   * precipitation
   * acid-base
   * oxidation/reduction

8. Acids/Bases (ch. 16)
   * strength/pH
   * polyprotic acids
   * salts/oxides
   * buffers
   * titrations

9. Solids, Liquids and Solutions (ch. 11, 13)
   * network, molecular and ionic solids
   * phase diagrams
   * heating/cooling curves
   * colligative properties

10. Redox/Electrochem. (ch. 20)
    * galvanic cells
    * standard reduction potentials
    * electrolysis

11. Kinetics (ch. 14)
    * rate laws
    * reaction mechanisms
    * catalysts

12. Nuclear Chemistry (ch. 21)
    * types of radioactive decay
    * radioactive decay equations