**Lesson Plans for October 1st - October 13th**

**AP Chemistry 2012-2013**

**Ms. Diane Paskowski**

***007 - Chemical Bond***

**Massachusetts Science Curriculum Frameworks**

5.3 Use the mole concept to determine number of particles and molar mass for elements and compounds.

4.1 Explain how atoms combine to form compounds through both ionic and covalent bonding. Predict chemical formulas based on the number of valence electrons.

4.2 Draw Lewis dot structures for simple molecules and ionic compounds.

4.3 Use electronegativity to explain the difference between polar and nonpolar covalent bonds.

4.4 Use valence-shell electron-pair repulsion theory (VSEPR) to predict the molecular geometry (linear, trigonal planar, and tetrahedral) of simple molecules.

**College Board AP Chemistry Curriculum Standards**

C1 – The course provides instruction in five content areas of which one is the Structure of Matter (Atomic Theory and Atomic Structure, Chemical Bonding).

**Lesson Plans**

**Monday, October 1st A day**

Test Period 2 on Atomic Theory and Periodicity

Period 3

Essential Questions:

1. How do we use mass (weight) to determine the number of particles in a sample?

Lecture/discussion/problems/activity: Defining and calculating average atomic mass and % abundance of isotopes.

**HW Due - All assigned Chapter 7 exercises, summaries, and key terms.**

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**Tuesday, October 2nd B day**

Periods 2 and 3

Essential Questions:

1. How do we use mass (weight) to determine the number of particles in a sample?

Lecture/discussion/problems/activity: Activity - Determining average M&M mass. Practice problems. Stoichiometry of Compounds – molar mass and percent composition. Determining formulas of a compound.

**HW Due – Lab Report on Flame Tests**

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**Wednesday, October 3rd C day**

Period 2

Essential Questions:

1. Why do atoms form chemical bonds?
2. How do scientists predict the type of bond formed?
3. What are the three major types of bonds?

Lecture/discussion/problems: Start discussion of bonding – PowerPoint presentation on Covalent and ionic bond, animations on the three types of bonds, energy considerations (Coulomb’s Law), compare and contrast ionic and covalent, patterns of electronegativity and effective nuclear charge.

**HW Due – Chapter 3 Exercises Atomic Masses and Moles and Molar Mass #27, 29, 39-49 odd**

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**Thursday, October 4th D day**

Period 3

Essential Question:

1. How do scientists determine the strength of a chemical bond?

Lecture/discussion/demonstration: Ionic - Predicting formulas of ionic compounds, lattice energy considerations, Lewis structures and crystal lattices – Coulomb’s Law again

**HW Due – Chapter 3 Percent Composition and Empirical and Molecular Formulas # 61, 63, 65, 69, 73, 77**

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**Friday, October 5th E day**

Periods 2 and 3

Essential Question:

1. What information is needed to determine how atoms form covalent bonds?
2. Why are ionic bonds considered stronger than covalent bonds?

Lecture/discussion/ demonstration/lab activity: Covalent compounds, bonding models, properties.

**HW Due – Chapter 8 – Chemical Bonds and Electronegativity # 23-27 odd, Ions and Ionic Bonds #33, 35, 39, 41, 43**

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**Tuesday, October 9th F day**

Periods 2 and 3

Essential Questions:

1. In what ways does the geometry of a molecule contribute to its physical and chemical properties?

Lecture/discussion/PowerPoint: Molecules, polarity, geometric shapes, VSEPR theory. Resonance Practice problems, drawing and interpreting, making 3D models.

**HW Due – Chapter 8 Lewis Structures #67, 69, 71 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Wednesday, October 10th G day**

Period 2

Essential Questions:

1. In what ways does the geometry of a molecule contribute to its physical and chemical properties?
2. How do metallic elements bond?

Lecture/Discussion/Activity: More practice on VSEPR and geometry of molecules. Discuss and practice shape and polarity determination using models. Discuss Resonance and using Formal Charge to determine most likely organization of electrons and geometry of the ion or molecule.

**HW Due – Chapter 8 Molecular Structure and Polarity #75, 85**

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**Thursday, October 11th H Day**

Period 3

Essential Question:

1. How can we determine the energy changes when covalently bonded molecules are formed?

Lecture/Discussion: Discuss bond energies and bond lengths. Estimate H of a reaction.

**HW Due – Chapter 8 Molecular Structure and Polarity # 91 – 97 odd, 101, 103**

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**Friday, October 12th A Day**

Periods 2 and 3

Review Bonding and Molecular Geometry. Begin the “Identifying Bond Type using Physical Properties of a Compound: Lab

**HW Due – Chapter 8 Bond Energies # 55 and 61**

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**Monday, October 13th B Day – Assessment Day**

Period 2

Multiple choice and Free Response questions

Period 3

Complete the “Identifying Bond Type using Physical Properties of a Compound: Lab

**BW Due**

**Summaries and Key Terms Chapter 3 Sections 1-6, Chapter 8 all sections**

**Bonding in Metals will be discussed in Solids and Liquids Chapter 10**