Chem 1020 Spring 2012
Exam 2 Study guide

The exam will be in a similar format to Exam 1, with multiple choice, short answer, and problems. The length will be similar.

The exam will cover Chapters 5 (5.5-5.10), 6 (6.1-6.7), 7 (7.1-7.6, 7.9-7.10), and 8 (8.1-8.6).

Everything in this course builds off the previous chapters' knowledge, and the material you learned for exam 1 will be essential toward your understanding of the material for exam 2. So, while there will be no questions on exam 2 covering strictly exam 1 material, you cannot forget about the material we've learned already. Specifically, if there was something you didn't understand in chapters 1-5, that needs to be a priority to learn otherwise the material in the following chapters will not make sense.

**Chapter 5**

- Write names or formulas (using ion pair and ratio) for binary (fixed ionic, variable ionic, or molecular) compounds. **(variable-charge ionic and combined naming worksheets)**
- **Memorize** Greek prefixes 1-6 for use in naming molecular compounds.
- **Memorize** the **names, formulas, and charges** of the polyatomic ions given in the notes and on the handout. Be able to convert any of the memorized polyatomic ions into related ions using the –ite suffix and the hypo- and per- prefixes.
- Write names from formulas (and vice-versa) given for any ionic compound containing polyatomic ions. **(polyatomic ion and combined naming worksheets)**
- Write names or formulas for acids (binary acids and polyatomic-ion-containing acids)

**Chapter 6** **(mole conversions and stoichiometry worksheet)**

- Mole concept and Avogadro's number ($6.022 \times 10^{23}$ particles/mol will be **given on exam**)
- Conversion between moles and number of particles using Avogadro's number
- Using mole ratios to convert between moles of different compounds in a chemical equation, or into individual atoms from a molecular formula
- Calculating molar mass for any compound, if you're given its formula
- Using molar mass to convert between mass and moles
- Calculating percent composition of an element in a compound

**Chapter 7**

- Chemical equations: reactants, products. Converting word descriptions to balanced chemical equations **(experiment 8 and chemical equations worksheet)**
- Phase labels (*s*), (*l*), (*g*), and (*aq*) **(chemical equations worksheet)**
- Using coefficients to balance chemical reactions **(chemical equations worksheet)**
- Using the solubility rules to determine solubility of ionic compounds (table of solubility rules will be **given on exam** with names but **not formulas** – e.g. sulfate, not $SO_4^{2-}$). Using solubility rules to apply (*s*) or (*aq*) phase labels to ionic compounds.
- Predicting products of double displacement (precipitation) reactions with phase labels, and identifying the precipitate or no reaction**. (experiment 4 and precipitation reactions worksheet)**
- Writing the chemical equation for complete combustion of carbon-containing compounds.
- Writing the chemical equation for the synthesis reaction of a metal (that forms a fixed-charged ion) and a nonmetal.
- Identifying double displacement, single displacement, combustion, decomposition, and synthesis reactions when shown.

*(continued…)*

**Chapter 8** **(Mole conversions and stoichiometry worksheet)**

- Stoichiometry concept
- Stoichiometry problems: converting between mass of one compound to mass of another compound in an equation (why must you go through moles and not just convert directly between masses?)
- Limiting reactant concept
- Determining the limiting reactant, when more than 1 reactant mass is given
- Determining the theoretical yield when there's a limiting reactant
- Determining the percent yield when an actual yield is given