The exam will cover the material found in Chapters 1-3. A good way to begin your preparation for the exam is to complete the OWL assignments and do the optional Chapter Review questions. The following list is also provided to help guide your studying. I've done my best to make it comprehensive, but it may not include everything that will be found on the exam. (FYI- If we covered a topic in lecture or in the OWL assignments, it is fair game for the exam.)

Be able to:

1. Use the periodic table to determine the following:
    a. The mass of an element both in atomic mass units and g/mole (make sure you understand the difference)
    b. The atomic number
    c. The number of protons and electrons in an atom
    d. The group and period number of an element
    e. Whether the element is a metal, nonmetal, or metalloid
2. Classify a material as a pure substance (element or compound) or a mixture (homogeneous or heterogeneous).
3. Given the atomic symbol for an atom, determine the element name, the mass number, the atomic number, and the number of protons, electrons, and neutrons in that atom

Calculations you should be comfortable doing:

4. Use scientific notation (make sure you know how to use your calculator properly!) and significant figures properly
5. Convert from one unit to another
    a. Use different unit systems or units of measurement
    b. grams→ moles
    c. moles→ grams
    d. given the number of grams or moles of a material, determine the number of atoms or molecules present
6. Calculate the average atomic mass of an element given the masses and abundances of isotopes
7. Determine the molar mass of a compound
8. Compound Stoichiometry
    a. Determine the % composition of an element in a compound
    b. Determine the empirical formula of a compound given either the % composition or g of each element in the compound
    c. Determine the molecular formula of a compound from % composition or g of each element and the molar mass
9. Reaction Stoichiometry
    a. Balance a chemical equation

b. Basic stoichiometry- given the number of grams or moles of one substance, determine how much of another is needed, or how much product can be made (theoretical yield)

Concepts to understand:

10. What ions are, how an atom becomes an ion
11. What are isotopes?
12. Identify different types of compounds and the types of elements that will make a particular type of compound (e.g., metal + nonmetal→ionic)
13. What do the coefficients in a balanced chemical equation mean?
14. Naming compounds, molecular and ionic (don't mix them up!)
    a. Given a name, write the formula of the compound
    b. Given a chemical formula, write the name
    c. Name compounds containing polyatomic ions