

LEARNING OBJECTIVES AND READINGS FOR CHEM 115, FALL 2008  
(Information for Weeks 1 - 3)

During **Week 1** you will need to:

1. **Register with OWL on-line learning** at <http://owl.thomsonlearning.com> . You will need an Access Code that we recommend purchasing on-line at the OWL homepage (<http://owl.thomsonlearning.com>). Follow the instructions carefully.
2. **Complete the Introduction to OWL** exercises with a due date of 9/2/2008, 6:00 PM.
3. **Read all the information in the course packet** that you received at the first lecture very carefully since this contains information about how we will handle a variety of situations during the semester. **Be particularly familiar with the safety, absence, and academic dishonesty policies for CHM 115.** You will need to keep this document as a reference for the entire semester. If you know someone who did not attend lecture on August 25 because he/she was not enrolled in CHM 115, let that person know that he/she can get a copy of the course packet in BRWN 1144.

### **Weeks 1 and 2**

#### Review Topics

You will be expected to review some basic material that you covered in your high school chemistry class(es) at the same time that you learn new chemical concepts related to Climate Change . Assignments are set up in OWL for you to accomplish this review so the topics will not be covered in lectures. CHM 115 TAs will be available during office hours to help with your review should you need some personal assistance.

The following sections in your textbook will be helpful for this review:

section 1.6, pp. 25-32	section 2.3-2.5, pp. 69-76
section 1.8, pp. 38-42	section 3.3, pp. 103-107
	section 3.5, pp. 116-119

#### Climate Change topics

Reading: Textbook Interchapter: The Chemistry of Fuels and Energy Sources, pp. 283-293;

- Understand the nature of potential and kinetic energy and their interconversion.
- Define and differentiate between renewable and nonrenewable fuels.
- Comprehend that one of the fundamental ideas in chemistry is the interaction between energy and matter.
- Define and differentiate between *hypothesis*, *theory* and *law* as scientists define and use these terms.
- Describe the basic structure of atoms.
- Identify the principle sources of energy used in the USA and how they compare to sources of energy used in less developed countries.
- Describe, in general, how the climate has varied over the past 160,000 years.

- Describe the evidence that indicates the climate is growing warmer.
- Describe the factors that are responsible for the Earth's energy balance.
- Describe the change in CO<sub>2</sub> concentrations in the atmosphere over the past 350 years.
- Identify the greenhouse gases and their sources and describe their importance as components of the atmosphere.

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Additional Review

**By the end of week 3, you need to have reviewed the following concepts and have mastered the following skills that you will be expected to use during the entire semester in lectures and for laboratory work.** Use the Index in your textbook to find the location of material for the various topics.

Chemistry involves a great deal of mathematical description of properties so, for the entire semester, you will need to

- Use significant figures rules and rounding strategies in all computation correctly to reflect uncertainty of measurements in science.
- Know the basic metric units of length, volume, mass, and temperature and their metric prefixes and use conversion factors to convert among the various units.

Chemistry involves understanding and explaining the properties of matter at the molecular level so, for the entire semester, you will need to be able to

- Predict the monatomic ion formed from a main group element and write the formula of the ion.
- Understand the information available in a chemical formula.
- Understand the relation between molecular or formula mass and molar mass.
- Calculate the molecular mass of a compound.
- Calculate the molar mass (units: g/mol) of any substance.
- Convert between amount of substance (unit: moles), mass (unit: grams) and number of chemical entities (units: molecules, atoms, ions) using conversion factors.
- Convert a chemical statement describing a chemical change into a balanced chemical equation.
- Use a balanced chemical equation for the quantitative study and description of chemical reactions (commonly called stoichiometry)
- Define the ideal gas law and its variables.