CHAPTER 12 LEARNING OBJECTIVES

Learning Objectives

To satisfy the minimum requirements for this course, you should be able to:

1. State, and explain the implications of, the first law of thermodynamics. Be able to calculate internal energy, work, and q.

2. Understand the relationship between heat and changes of temperature in order to:
   - Use the heat capacity of a substance to calculate the heat required to raise its temperature.
   - Calculate energy changes from calorimetry data and write a thermochemical equation.

3. Calculate the enthalpy of phase changes.

4. Distinguish between the internal energy and enthalpy of a process and describe how each is measured
   - Calculate the enthalpy change of a reaction given the change in internal energy, and *vice versa*.
   - Be able to use the equation $\Delta H = \Delta U + \Delta PV$.

5. Calculate or estimate reaction enthalpies by the following methods:
   - Hess's Law
   - Standard enthalpies of formation
   - Average bond enthalpies

6. Use thermochemical reactions to calculate the heat required for or produced by a given reaction or the amount of fuel needed to produce a given amount of heat.