Chapter 13 – Properties of Solutions (Syllabus)
Chemistry: The Central Science
(pgs. 525-567)

1.   13.1 (Solution Process):
   ✓ What is a solution and what are the 2 factors that affect the ability to form solution?
   ✓ How does entropy relate to the formation of solutions?
   ✓ Describe the 3 kinds of intermolecular interactions that are involved in solution formation.
   ✓ What is solvation? Hydration?
   ✓ Describe how the enthalpy of solution is influenced by intermolecular interactions and how this relates to Hess's Law.

2.   13.2 (Saturated Solutions and Solubility):
   ❖ Terms: crystallization, dynamic equilibrium, solubility, and saturated, unsaturated & supersaturated solutions

3.   13.3 (Factors Affecting Solubility):
   ➤ Applications of some topics from:
      a) Ch. 8-Bond types, electronegativity
      b) Ch. 9-VSEPR (shapes)
      c) Ch. 11-Intermolecular forces
   ➤ Interactions between solutes and solvents
   ➤ Miscibility vs. immiscibility
   ➤ The effect of pressure on the solubility of gases (Henry's law)
   ➤ The effect of temperature on the solubility of solids and gases in water

4.   13.4 (Expressing Solution Concentration):
   o Mass %, parts per million (ppm), & parts per billion (ppb)
   o Mole Fraction (X)
   o Molarity (M)
   o **Skip:** *Molality (m)*

5.   13.5 (Colligative Properties): *Skip this section.*

6.   13.6 (Colloids):
   ▪ In addition to what's in the book, a handout will be given comparing colloids to solutions and suspensions.
   ▪ Terms: colloidal dispersions (colloids), Tydall effect, hydrophilic & hydrophobic colloids, adsorption, and Brownian motion

7.   Lab: Spectroscopy and Forensics (Forensic Case Study 1: The Untimely Death)

8.   Chapter 13 Focus Problems:
   o Visualizing Concepts & Exercises: #'s 2, 4, 5, 13, 15, 21, 7, 24, 25, 27, 37, 39, 43, 55, 59, 12, 86, 87, 90

   o Additional Exercises: none

   o Integrative Exercises: #'s 107, 108, 110

9.   Ch. 13 Test: The test will be in about 1 week and will be about 80 pts.