General Chemistry I **Dr. M. J. Wieder**
Topic: Intramolecular and Intermolecular Forces

The student should be able to:

1. Differentiate between ionic and non-ionic compounds based upon an examination of their formulas.

2. Differentiate between (pure) covalent and polar covalent compounds based upon an examination of their formulas.

3. Name and write formulas for ionic compounds given the combining elements and/or species.

4. Explain and recognize examples of the Lewis Octet rule.

5. Draw Lewis dot structures consistent with the Octet rule for covalently bonded molecular species.

6. Explain the relationship between hybridization of atomic orbitals and the electronic geometry of covalently bonded species.

7. Explain the concept of resonance, and draw resonance structures for given compounds or polyatomic ions using Lewis dot structures.

8. Discuss how the three states of matter differ with respect to various physical properties (i.e. density, rate of diffusion, compressibility, etc.).

9. Identify the various attractive forces that operate in real gases, liquids, and solids, and compare their relative strengths.

10. Define heat of vaporization, and relate heats of vaporization to intermolecular forces.

11. Discuss the factors that influence the vapor pressure of liquids and solids.

12. Define heat of fusion, and compare it to the corresponding heat of vaporization for the substance of interest.

13. Identify relevant regions and points in phase diagrams for solid/liquid/gas equilibria.