CHAPTER 9 LEARNING OBJECTIVES

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

Use valence bond theory to explain how a covalent bond forms and to account for molecular geometry. You should be able to:

- explain why bond formation is an exothermic process and bond breaking is an endothermic process
- explain the relationship between atomic orbitals and hybrid orbitals
- recognize names, shapes, and orientation of hybrid orbitals appropriate for central atoms surrounded by up to 6 electron pairs
- use Lewis structures to predict the hybridization state of each central atom in a molecule and the geometry around each atom
- distinguish between σ bonds and π bonds and be able to determine the number of sigma and pi bonds in a molecule
- describe the delocalized pi bonding found in species such as benzene and carbonate ion and draw Lewis structures to depict the delocalized bonding.