**CHAPTER 17 STUDY OUTLINE**

**Evolution of Populations**

17.1 Genes and Variation ( pg. 482 – 486)

1. Genetics Joins Evolutionary Theory
   1. Genotype and Phenotype in Evolution
   2. Populations and Gene Pools
2. Sources of Genetic Variation
   1. Mutations
   2. Genetic Recombination in Sexual Reproduction
   3. Lateral Gene Transfer
3. Single-Gene and Polygenic Traits
   1. Single-Gene Traits
   2. Polygenic Traits

17.2 Evolution as Genetic Change in Populations (pg. 487 – 493)

1. How Natural Selection Works
   1. Natural Selection on Single-Gene Traits
   2. Natural Selection on Polygenic Traits
      1. Directional Selection
      2. Stabilizing Selection
      3. Disruptive Selection
2. Genetic Drift
   1. Genetic Bottlenecks
   2. The Founder Effect
3. Evolution Versus Genetic Equilibrium
   1. Sexual Reproduction and Allele Frequency
   2. The Hardy-Weinberg Principle
      1. Nonrandom Mating
      2. Small Population Size
      3. Immigration or Emigration
      4. Mutations
      5. Natural Selection

17.3 The Process of Speciation (pg. 494 – 497)

1. Isolating Mechanisms
   1. Behavioral Isolation
   2. Geographic Isolation
   3. Temporal Isolation
2. Speciation in Darwin’s Finches
   1. Founders Arrive
   2. Geographic Isolation
   3. Changes in Gene Pools
   4. Behavioral Isolation
   5. Competition and Continued Evolution