AP Biology Evolution Unit Curriculum Summary

* Natural selection is the major mechanism of evolution
* Darwin’s theory of natural selection.
* Evolutionary fitness
* Genetic variation: mutations and new gene combinations
* Define adaptation
* The effect of chance and random events, especially on small populations (genetic drift)
* Hardy-Weinberg genetic equilibrium
* Diverse gene pool and phenotypic variation
* Evidence of evolution = geographical, geological, morphological, molecular, genetic, fossils, homologous and vestigial structures
* Phylogenetic trees and cladograms
  + Traits that are derived or lost
  + Speciation and common ancestors
  + Often being changed and revised with new information
* Shared characteristics of life (all three domains)
  + DNA and RNA as genetic material
  + Mechanisms of transcription, translation, and DNA replication
  + Conserved metabolic pathways, e.g. glycolysis
  + Similar organelles among all eukaryotic cells: cytoskeleton, membrane-bound organelles, endoplasmic reticulum, nuclear membrane, linear chromosomes
* Speciation and extinction
  + Adaptive radiation
  + Reproductive isolation = geographic barriers, various pre- and post-zygotic mechanisms
* Populations of organisms continue to evolve
  + E.g. emergent diseases, drug/pesticide resistance, etc.