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.