



Reavis High School

Honors Biology 1 Curriculum Snapshot



Unit 1: Lab Safety

3
Days

Students will understand laboratory safety guidelines as outlined by Flinn Scientific.



Unit 2: Classification

13
Days

Students will understand the basics of systematics as they relate to taxonomy. They will discuss the role Linnaeus played in modern taxonomy and explain his system of classification and binomial nomenclature. They will also be able to interpret a cladogram and a phylogenetic tree. Finally, they will be able to name and describe the three domains and six kingdoms as well as use a dichotomous key to identify species.



Unit 3: Populations

9
Days

Students will understand how density-independent and density-dependent factors affect population growth. Then, they will compare and contrast exponential growth and logistic growth. They will understand how to distinguish among the three patterns of dispersion in a population and be able to differentiate r- strategies from K-strategies. Finally, students will be able to interpret survivorship curves and life tables as well as population/age/gender graphs in relation to population changes.



Unit 4: Ecosystems

11
Days

Students will understand the key features of an ecosystem. Once they compare food chains and food webs and describe energy loss and transfer in a food chain, they will be able to discuss energy/biomass/numbers pyramids. They will identify the key features of the three types of symbiotic relationships and understand how co-evolution can affect these interactions between species. Next, they will compare and contrast fundamental and realized niches and how competition develops. Finally, they will understand how climate determines ecosystem distribution and how to interpret graphics of the Earth's biomes and distinguish between primary and secondary succession.



Unit 5: Macromolecules

20
Days

Students will describe the relationship between atomic structure and types of bonding. They will understand and identify the structures and roles of the four macromolecules and their functions in living systems. Finally, they will be able to explain how enzymes catalyze chemical reactions as well as how the environment can affect the effectiveness of enzyme activity.



Unit 6: Cells

6
Days

Students will be able to describe the three parts of the Cell Theory. They will be able to compare and contrast plant and animal cells and distinguish organelle functions in each type of cell. Finally, students will use the light microscope to observe various cell types.



Unit 7: Cell Transport

7
Days

Students will explain the processes of diffusion and osmosis and their significance in cell function. They will distinguish passive transport from active transport across the cell membrane. Next, they will describe the sodium potassium pump, proton pump, and coupled channels. Finally, students will describe the processes of endocytosis and exocytosis.



Unit 8: Cellular Respiration

9
Days

Students will be able to discuss the role of ATP in metabolism. They will be able to discuss cellular respiration including the processes of glycolysis, Krebs Cycle, and electron transport chain. Finally, they will know the differences between aerobic respiration and anaerobic respiration including the two types of fermentation.



Unit 9: Cell Division

9
Days

Students will be able describe the structure of a chromosome and explain cell cycle. Also, the students will be able to summarize the events that happen during Meiosis I/Meiosis II and mitosis.



Unit 10: DNA, RNA, and Protein Synthesis

11
Days

Students will describe the structure and function of DNA and RNA. They will explain the steps of DNA replication, transcription, and translation. Finally, students will be able to discuss the different types of DNA mutations and the effect on the organism.



Unit 11: Genetics

22
Days

Students will be able to predict the probability of genetic outcomes in a lab format. Students shall also be able to complete a Punnett square with genotype and phenotype outcomes for the following: monohybrid, dihybrid, incomplete dominance, sex-linked, and multiple alleles. Finally, they will be able to interpret a pedigree and will be able to recognize genetic mutations from a karyotype.



Unit 12: Evolution

10
Days

Students will be able to differentiate between Lamarck and Darwin's theories of evolution. They will be able to discriminate between gradualism and punctuated equilibrium and describe how new species evolve. Then, they will be able to create a geological time scale including eras and periods. In using this timeline, they will be able to describe the first living organisms on Earth and how they affected the Earth. Finally, students will be able to discuss the order of how living things evolved on Earth.



Unit 13: Virus and Bacteria

7
Days

Students will describe the structure of a virus and bacteria and infer the idea that viruses are not alive and bacteria are alive. Also, students will compare and contrast the reproductive cycles of viruses and bacteria and analyze the role of a pathogen.



Unit 14: Plants and Photosynthesis

10
Days

Students will be able to explain how plants evolved and compare the differences between vascular and nonvascular plants. Students will be able to describe the differences between angiosperms and gymnosperms. Students will be able to identify the structure and function of a flower and be able to relate the characteristics of fruits to their role in seed dispersal. Also, students will be able to illustrate how photosynthesis and cellular respiration form a continuous cycle.



Unit 15: Invertebrates

6
Days

Students will be able to describe the general characteristics of all invertebrates. Students will be able to analyze the differences of embryonic tissues in animals and explain the evolution of the body cavity. Finally, students will compare and contrast characteristics of major invertebrate phylums.