



Reavis High School

Biology I Curriculum Snapshot



| Unit 1: Scientific Method, Lab Safety, and Properties of Life | |
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| 12 - 15 Days | Students will understand the steps of the scientific method with emphasis on applying these steps to everyday experiences. They will practice the steps by designing their own experiment, generating and graphing data, and analyzing their results. Identifying potential sources of error and data analysis will be emphasized. Students will also be introduced to, trained in, and expected to practice proper lab safety procedures. |



| Unit 2 : Populations | |
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| 8 Days | Students will understand the basic mechanisms that cause populations to increase and decrease in size. They will be able to compare and contrast the phenomena of exponential and logistic growth. Different types of reproduction and dispersal, such as r and K strategies, will also be considered. An additional focus of this unit concerns the impact that human populations and human activities have on local and global environments. |



Unit 3: Ecosystems

12
Days

Students will identify the major features of ecosystems such as climate, productivity, and the transfer of energy between the trophic levels of a food web. This unit will also focus on the relationships among organisms within an ecosystem, such as the establishment of ecological niches, the coevolution of species, and the three types of symbiotic relationships that exist between organisms of an ecosystem.



Unit 4: Chemistry of Cells

12
Days

Students will describe the relationship between atomic structure, bonding, and attraction. Students will diagram and identify the four major biological macromolecules and will relate the significance of biologic catalysts to maintaining life. Students will also use reagents to identify types of macromolecules.



Unit 5: Cells

15
Days

Students will describe the Cell Theory and credit the scientists involved in creating the Theory. Next, students will focus on understanding the form and function of cells (cellular morphology). Students will use available technologies to observe and identify various cell types and visible organelles. Through hands-on activities, students will also be able to explain the efficiency of cell size.



Unit 6: Cell Division

12
Days

Students will be able to differentiate between cell division in prokaryotic and eukaryotic cells. Students will identify the stages of cell division (using available technology) and relate the similarities and differences of the stages. Finally, students will describe how checkpoints prevent most errors in cell division and relate this to cancer.



Unit 7: Cellular Movement

10
Days

Students will predict the direction of water movement when a semi-permeable membrane is placed in various solutions and understand why the movement occurred based on the concentration gradient. Students will identify the similarities and differences among diffusion, facilitated diffusion, and osmosis. Students will also compare and contrast endocytosis and exocytosis, including the role of proteins in molecular transport through membranes.



Unit 8: Photosynthesis

12
Days

Students will describe the process of photosynthesis including the different stages and the reactants and products involved in each stage. Additionally, students will demonstrate how photosynthesis is affected by changes in light intensity and carbon dioxide concentration.



Unit 9: Cell Respiration

12
Days

Students will identify and understand the stages of aerobic and anaerobic respiration including glycolysis, the Krebs Cycle, and electron transport. Additionally, students will be able to identify the reactants and products in each of the stages and identify the relationship among photosynthesis, cell respiration, and energy transfer.



Unit 10: DNA, RNA, Protein Synthesis

20
Days

Students will describe the structure of DNA and understand DNA replication, transcription, translation processes. Students will also recognize the changes in DNA, known as mutations.



Unit 11: Genetics

25
Days

Students will understand the theory and laws of heredity. They will understand Mendel's breeding experiments and how they led to the Law of Independent Assortment and Law of Segregation. They will use Punnett squares to predict patterns of heredity in monohybrid, dihybrid, incomplete dominance, co-dominance, sex-linked, and multiple allele crosses. Finally, they will interpret a pedigree by following the inheritance of a trait through multiple generations.



Unit 12: Natural Selection

8
Days

After studying the main components of natural selection, students will determine which members of a species will survive to pass on their traits. By using evidence that supports evolution, students will describe the relationships among organisms that arise from common ancestors. Finally, students will interpret phylogenetic trees and cladograms that represent evolutionary history.



Unit 13: Classification

7
Days

After studying the unique characteristics of each kingdom of living organisms, students will learn how organisms are further classified to the species level. Then, they will use binomial nomenclature to name living organisms with their scientific names. Finally, students will construct a dichotomous key to classify organisms.