



Reavis High School

Biology Curriculum Snapshot

Unit 1: Scientific Method, Microscopes and Lab Safety

Students will understand the stages common to scientific investigations. They will understand the difference between forming a hypothesis and making a prediction and how to design a controlled experiment to test a hypothesis. Students will understand how to differentiate a control group from an experimental group and be able to identify the independent variable and dependent variable of an experiment. Students will be able to produce and interpret graphs and data tables based on experimental data. They will identify sources of error in a scientific investigation. Students will be able to differentiate between a theory and scientific law. They will understand laboratory safety guidelines as outlined by Flinn Scientific. Students will identify the parts of the microscope and their functions. Students will be able to describe some practical uses of the microscope.

Number of Days:
15-20



Unit 2: Populations

Students will understand how populations grow and compare and contrast exponential growth and logistic growth. They will understand how to distinguish among the three patterns of dispersion in a population. Students will identify the potential consequences of uncontrolled population growth and identify the differences in population growth in developing countries and industrial countries. They will understand how populations impact the three biogeochemical cycles.

Number of Days:
9



Unit 3: Ecosystems

Students will understand the key features of an ecosystem. They will distinguish between primary and secondary succession. Students will interpret and compare food chains and food webs and describe energy loss and transfer in a food chain. They will understand how coevolution can affect interactions between species and describe the role of competition in shaping communities. Students will compare and contrast fundamental and realized niches. They will identify the key features of the 3 types symbiotic relationships. Students will understand how climate determines ecosystem distribution and how to interpret graphics of the Earth's biomes.

Number of Days:
12



Unit 4: Chemistry, Macromolecules and Enzymes

Students will describe the atomic structure. They will describe how atoms form bonds with each other. Students will distinguish ionic and covalent bonds. Students will identify the general structures and functions of carbohydrates, lipids, proteins, and nucleic acids. Students will describe the catalytic activity of enzymes.

Number of Days:
10



Unit 5: Cell Structure and Function

Students will describe the atomic structure. They will describe how atoms form bonds with each other. Students will distinguish ionic and covalent bonds. Students will identify the general structures and functions of carbohydrates, lipids, proteins, and nucleic acids. Students will describe the catalytic activity of enzymes.

Number of Days:
10



Unit 6: Osmosis, Diffusion, and Cell Transport

Students will explain the processes of diffusion and osmosis and their significance in cell function. Students will distinguish passive transport from active transport across the cell membrane. Students will describe the processes of endocytosis and exocytosis

Number of Days:
10



Unit 7: Energy

Students will describe how living organisms harness the power of food to carry out chemical reactions in their bodies. Students will describe how organisms store energy from food in molecules of ATP. Students will distinguish anaerobic from aerobic respiration. Students will describe how photosynthesis captures the energy from the sun and stores it in molecules of glucose. Students will write out the chemical equation of photosynthesis, identifying the products and reactants. Students will compare and contrast the chemical reactions of photosynthesis and aerobic respiration.

Number of Days:
10



Unit 8: Cell Division

Students will identify the roles of cell division in the reproduction, growth, and repair of cells. Students will identify the conditions under which the division of its cells would benefit an organism. Students will identify mitosis as a process which produces two identical copies of a single parent cell. Students will identify meiosis as a process which produces gametes, cells specialized for sexual reproduction. Students will describe the process by which meiosis produces cells with one half the number of chromosomes. Students will identify and describe the phases of interphases of the parent cell. Students will identify the phases of mitotic cell division. Students will identify the products of meiosis I and meiosis II.

Number of Days:
15



Unit 9: DNA and RNA

Students will describe the experiments that lead to the identification of DNA as the genetic material. Students will describe the structure of a DNA and RNA nucleotide. Students will describe the structure of double-stranded DNA. Students will describe the process of DNA replication, transcription and translation. Students will describe the functions of tRNA, mRNA, and rRNA. Students will translate a sample piece of RNA into a protein. Students will describe the effect a mutation can have on the organism.

Number of Days:
15