



School District of Pickens County

Building success beyond the classroom

SC Standards: Science Biology I

Unit: Cells

- Science-B-2.1 Recall the three major tenets of cell theory (all living things are composed of one or more cells, cells are the basic units of structure and function in living organisms, and cells arise from pre-existing cells).
- Science-B-2.2 Summarize the structures and functions of organelles found in a eukaryotic cell (including the nucleus, mitochondria, chloroplasts, lysosomes, vacuoles, ribosomes, endoplasmic reticulum [ER], Golgi apparatus, cilia, flagella, cell membrane, nuclear membrane).
- Science-B-2.3 Compare the structures and organelles of prokaryotic and eukaryotic cells.
- Science-B-2.4 Explain the process of cell differentiation as the basis for the hierarchical organization of organisms (including cells, tissues, organs, and organ systems).

Unit: Chemistry of Life

- Science-B-2.8 Explain the factors that affect the rates of biochemical reactions (including pH, temperature, and the role of enzymes as catalysts).

Unit: Introduction to Biology

- Science-B-1.1 Generate hypotheses based on credible, accurate, and relevant sources of scientific information.
- Science-B-1.2 Use appropriate laboratory apparatuses, technology, and techniques safely and accurately when conducting a scientific investigation.
- Science-B-1.3 Use scientific instruments to record measurement data in appropriate metric units that reflect the precision and accuracy of each particular instrument.
- Science-B-1.4 Design a scientific investigation with appropriate methods of control to test a hypothesis (including independent and dependent variables), and evaluate the designs of sample investigations.
- Science-B-1.5 Organize and interpret the data from a controlled scientific investigation by using mathematics, graphs, models, and/or technology.
- Science-B-1.6 Evaluate the results of a controlled scientific investigation in terms of whether they refute or verify the hypothesis.
- Science-B-1.7 Evaluate a technological design or product on the basis of designated criteria (including cost, time, and materials).
- Science-B-1.8 Compare the processes of scientific investigation and technological design.
- Science-B-1.9 Use appropriate safety procedures when conducting investigations.

Unit: Cellular Transport

- Science-B-2.5 Explain how active, passive, and facilitated transport serve to maintain the homeostasis of the cell.



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SC Standards: Science

Biology I

Unit: Energy and the Cell

- Science-B-3.1 Summarize the overall process by which photosynthesis converts solar energy into chemical energy and interpret the chemical equation for the process.
- Science-B-3.2 Summarize the basic aerobic and anaerobic processes of cellular respiration and interpret the chemical equation for cellular respiration.
- Science-B-3.3 Recognize the overall structure of adenosine triphosphate (ATP)-namely, adenine, the sugar ribose, and three phosphate groups-and summarize its function (including the ATP-ADP [adenosine diphosphate] cycle).
- Science-B-3.4 Summarize how the structures of organic molecules (including proteins, carbohydrates, and fats) are related to their relative caloric values.
- Science-B-3.5 Summarize the functions of proteins, carbohydrates, and fats in the human body.

Unit: Nucleic Acids

- Science-B-4.1 Compare DNA and RNA in terms of structure, nucleotides, and base pairs.
- Science-B-4.2 Summarize the relationship among DNA, genes, and chromosomes.
- Science-B-4.3 Explain how DNA functions as the code of life and the blueprint for proteins.
- Science-B-4.4 Summarize the basic processes involved in protein synthesis (including transcription and translation).

Unit: Biotechnology Genetic Technology

- Science-B-4.9 Exemplify ways that introduce new genetic characteristics into an organism or a population by applying the principles of modern genetics.

Unit: Cell Division Regulation

- Science-B-2.6 Summarize the characteristics of the cell cycle: interphase (called G1, S, G2); the phases of mitosis (called prophase, metaphase, anaphase, and telophase); and plant and animal cytokinesis.
- Science-B-2.7 Summarize how cell regulation controls and coordinates cell growth and division and allows cells to respond to the environment, and recognize the consequences of uncontrolled cell division.
- Science-B-4.5 Summarize the characteristics of the phases of meiosis I and II.
- Science-B-4.8 Compare the consequences of mutations in body cells with those in gametes.

Unit: Mendelian Genetics Heredity

- Science-B-4.6 Predict inherited traits by using the principles of Mendelian genetics (including segregation, independent assortment, and dominance).

