Biology Standards

BOLD = Units of Study

Sub-headings based on Next Generation Science Standards

Science and Engineering Practices

Students will engage in science and engineering practices to understand natural phenomena and designed systems. Students will be able to: ask questions and define problems, develop and use models, plan and carry out investigations, analyze and interpret data, use mathematical and computational thinking, construct explanations and design solutions, engage in argument from evidence, and obtain, evaluate and communicate information. This standard also includes an exploration into how science and technology may raise ethical issues for which science, by itself, does not provide answers and solutions. **(Assessed each Trimester)**

Ecosystems

Interdependent Relationships- Describe how organisms interact with their environment and analyze the effects of these interactions.

Cycles of Matter I- Explain the flow of energy and cycling of matter among organisms in an ecosystem. Conceptual understanding of photosynthesis and cellular respiration as providing most of the energy for life processes.

Ecosystem Dynamics- Demonstrate fundamental understanding of carrying capacity through the use of mathematical models. Design solutions for reducing the impact of human activities on the environment and maintaining biodiversity.

Evolution

Natural Selection & Adaptation- Describe the factors which influence the process of natural selection. Explain the role of genetic variation in natural selection and how certain traits may give an advantage in a specific environment and therefore are more common in a population.

Social Interactions & Group Behavior- Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.

Common Ancestry & Diversity- Construct an explanation that common ancestry and evolution are supported by multiple lines of empirical evidence.

Heredity

Variation of Traits- Explain why individuals of the same species vary in how they look, function, and behave and utilize concepts of probability to explain this genetic variation.

Inheritance of Traits- Describe the mechanisms of genetic inheritance and explain the environmental and genetic causes of gene mutations.

Cells

Structure and Function- Conduct investigations and gather evidence to support explanations of cell function and reproduction.

Cycles of Matter 2- Use models to explain photosynthesis, respiration, and the cycle of matter and the flow of energy in living organisms on a cellular level.

Molecules to Organisms

Macromolecules- Explain the role of macromolecules within cells, specifically how the structure of DNA determines the structure of proteins which carry out the essential functions of life.

Growth and Development of Organisms- Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.

Gene Expression- Examine how differences in gene expression correlate with risk of disease.

H.O.W. Focus, "The Big 3":

I am an active participant **(classwork)**.

I meet deadlines and established criteria **(deadlines)**.

I consistently complete my homework **(homework)**.

****These areas will be assessed and reported out on approximately every two weeks.**