

Grand Island Public Schools

BIOLOGY

Course Length: Two semesters

Grade Levels: 9, 10, 11, 12

Prerequisite Courses: Science 1-2 or advanced in 8th Grade Science

Course Description:

This course explores the concepts of cells, heredity, evolution, matter, energy and organization of life, behavior of organisms, and interdependence.

Biology Course Standards

As a result of their participation in this course, students will:

Strand 1: Inquiry and Other Integrated Science Components

- Use scientific inquiry to solve problems and conduct scientific investigations.
 - Formulate questions that guide scientific investigations.
 - Develop a testable hypothesis based on prior scientific knowledge.
 - Design and conduct a scientific investigation to test the hypothesis.
 - Use technology, observations and mathematics to improve investigations and communications.
 - Formulate and revise scientific explanations and models using logic and evidence.
 - Communicate and defend a scientific argument.
- Investigate and understand that scientists, past and present, have different abilities, technologies, qualities, theories, and scientific habits of mind (e.g., ethics).
- Use appropriate technology as a tool in problem solving.
- Describe the similarities and differences between science and technology and the impact they have on each other.
- Understand the role of science in making informed decisions.

Strand 2: Physical Science

- Understand and analyze biochemical principles essential for life including water chemistry, photosynthesis, cellular respiration, structure and function of macromolecules structure and function of macromolecules and enzymes.
- Describe and explain the basic structure of atoms, bonding and their reactions.

Strand 3: Life Science

- Analyze the molecular basis of heredity.
- Create models showing the structure and function of cells.
- Understand and evaluate the theory of biological evolution and how natural selection leads to adaptation.
- Describe how changes in abiotic and biotic factors affect the ability of the environment to support life.
- Recognize and explain the patterns of behavior and interdependence of organisms in their natural environment.
- Describe biological levels of organization including from atoms to Biosphere.
- Explain and understand the function and structure of microorganisms, plants, and animals.

Strand 4: Earth and Space Science

- Describe factors that might limit dynamic equilibrium of ecosystems including: disasters, climate change, new species, human activities, population changes, technological advances.
- Recognize that energy for life comes from the sun.
- Identify different methods for determining fossil age.