

BIOLOGY LEARNING OBJECTIVES

I. Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate results and reasonable conclusions of scientific investigations.

1. The learner will use or make systematic observations, accurate measurements, and control variables to formulate and conduct investigations, and to draw conclusions based on specific scientific data.
2. The learner will communicate scientific data and results, with an emphasis placed on data analysis, graphing, and metric measurements.
3. The learner will select and use appropriate tools including technology to make measurements, gather, process, and analyze data from scientific investigations.
4. The learner will demonstrate safe procedures during scientific investigations.

II. Students, through the inquiry process, demonstrate knowledge of properties, forms, changes and interactions of physical and chemical systems.

5. The learner will discuss the interrelationship of chemistry and biology by examining basic biochemical processes such as photosynthesis and cellular respiration.
6. The learner will explain the role and relationships of organic and inorganic molecules in living systems.
7. The learner will describe and explain the processes involved in energy use in cell maintenance, growth, repair and development.

III. Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process of diversity of life, and how living organisms interact with each other and their environment.

8. The learner will relate the structure to function of the cell and its components.
9. The learner will describe the relationship between organisms function and cell function as it pertains to homeostasis, metabolism, reproduction, adaptation, etc.
10. The learner will discuss the elements of the modern cell theory.
11. The learner will apply and analyze the principles of genetics.
12. The learner will relate heredity to the structure and function of DNA.
13. The learner will relate protein synthesis to heredity.
14. The learner will describe how genetic mutations contribute to the diversity of life.
15. The learner will survey different mechanisms of selection.
16. The learner will evaluate how natural selection applies to diversity.
17. The learner will explain the basic concepts of population dynamics.
18. The learner will describe the relationship between the levels of taxonomy.
19. The learner will compare and contrast the characteristics of the kingdoms.
20. The learner will discuss various types of biotic and abiotic interactions within an ecosystem.
21. The learner will describe the cyclical nature of ecosystems.

IV. Students, through the inquiry process, demonstrate knowledge of the composition, structures, processes and interactions of Earth's systems and other objects in space. *None purposefully written for this standard for Biology*

V. Students, through the inquiry process, understand how scientific knowledge and technological developments impact communities, cultures, and societies.

22. The learner will survey current applications of biotechnology and their social implications.
23. The learner will survey current ecological issues and their social implications including examples from or impacts on contemporary Montana American Indian communities.

VI. Students understand historical developments in science and technology

24. The learner will investigate the historical impact of biology and technology on society.
25. The learner will understand how the scientific process changes overtime.