

Biology Unit Timeline and Overview 2025

Fall Semester:

1st 6 Weeks:

Unit 1: Cellular Structures- This unit bundles student expectations that focus on biomolecules, cells, and viruses. Students will relate the function of biomolecules to the structure and function of cells, compare and contrast prokaryotic eukaryotic cells, compare and contrast scientific explanations for cellular complexity, and compare the structures of viruses to cells

Standards: B.1.F, B.4.C, B.5.A, B.5.B, B.5.D

Unit 2: Cellular Processes- This unit bundles student expectations that focus on cellular processes that are associated with the cellular structures from Unit 01. Students will investigate homeostasis through the cellular transport of molecules, explain how matter is conserved and energy is transferred during photosynthesis and cell respiration, and investigate the role of enzymes in facilitating cellular processes.

Standards: B.1.B, B.1.C, B.1.D, B.1.E, B.1.G, B.5.C, B.11.A, B.11.B

2nd 6 Weeks:

Unit 2: Cellular Processes (continued)

Standards: B.1.B, B.1.C, B.1.D, B.1.E, B.1.G, B.5.C, B.11.A, B.11.B

Unit 3: DNA Structure and Cell Cycle- This unit bundles student expectations that focus on the cell cycle and DNA structure. Students will explain the importance of the cell cycle to the growth of organisms, including the role that DNA replication plays. The components of DNA will also be identified, and then students will examine disruptions of the cell cycle that can lead to diseases, like cancer.

Standards: B.3.A, B.4.B, B.6.A, B.6.C, B.7.A

Unit 4: The Role of Nucleic Acids and Protein Synthesis- This unit bundles student expectations that focus on the importance of DNA sequencing and protein synthesis. Students will explain how nucleotide sequences determine specific traits in an organism and the process of protein synthesis using models of DNA and RNA.

Standards: B.1.G, B.2.A, B.7.A, B.7.B

Unit 5: Gene Expression- This unit bundles student expectations that focus on gene expression. Students will describe the significance of gene expression, explain the process of cell specialization through cell differentiation, identify and illustrate changes in DNA, evaluate the significance of those changes, and discuss the importance of molecular technologies that are applicable in current research and engineering practices.

Standards: B.2.B, B.3.B, B.3.C, B.6.B, B.7.B, B.7.C, B.7.D

3rd 6 Weeks:

Unit 5: Gene Expression (continued)

Standards: B.2.B, B.3.B, B.3.C, B.6.B, B.7.B, B.7.C, B.7.D

Unit 6: Genetics- This unit bundles student expectations that focus on genetics. Students will analyze the significance of various properties during meiosis that increase diversity in the sexual reproduction of populations and predict outcomes of various genetic combinations.

Standards: B.2.A, B.2.C, B.3.A, B.3.B, B.8.A, B.8.B

Spring Semester:

4th 6 Weeks:

Unit 7: Evidence of Evolution- This unit bundles student expectations that focus on evidence of evolution. Students will examine the scientific explanations for the origin of DNA, analyze and evaluate evidence of common ancestry, and examine scientific explanations for the varying rates of change in the fossil record.

Standards: B.1.H, B.4.A, B.7.A, B.9.A, B.9.B

Unit 8: Mechanisms of Evolution- This unit bundles student expectations that focus on mechanisms of evolution. Students will analyze and evaluate how natural selection produces change in populations and not in individuals, the elements of natural selection, and how natural selection leads to speciation. Students will also analyze mechanisms of evolution other than natural selection and their effect on a population's gene pool.

Standards: B.3.B, B.10.A, B.10.B, B.10.C, B.10.D

5th 6 Weeks:

Unit 9: Animal and Plant Systems- This unit bundles student expectations that focus on interactions within animal and plant systems. Students will analyze the interactions that occur among animal systems to perform various functions, explain how viruses spread and cause disease, and explain how the interactions that occur among plant systems are facilitated by their structures.

Standards: B.1.A, B.1.F, B.5.D, B.12.A, B.12.B

Unit 10: Ecosystem Stability- This unit bundles student expectations that focus on interactions within ecosystems and how they influence ecosystem stability. From the central viewpoint of ecosystem stability, students will investigate and evaluate ecological relationships, analyze the disruptions to the cycling of matter and flow of energy through trophic levels, explain the significance of the carbon and nitrogen cycles, analyze the consequences of disrupting both cycles, explain how environmental change affects biodiversity, and analyze how changes in biodiversity impact ecosystem stability.

Standards: B.1.A, B.1.B, B.2.D, B.3.C, B.13.A, B.13.B, B.13.C, B.13.D

6th 6 Weeks:

Unit 10: Ecosystem Stability (continued)

Standards: B.1.A, B.1.B, B.2.D, B.3.C, B.13.A, B.13.B, B.13.C, B.13.D

Unit 11: Current Developments in Biology- This unit bundles student expectations that focus on past and current biological research. Students will revisit topics already covered in this course, including how viruses spread and cause disease, cell specialization through differentiation, molecular technologies, and ecosystem stability. Through these topics, students will relate the impact of past and current research on scientific thought and society and research as well as explore different resources to investigate STEM careers.

Standards: B.4.B, B.4.C, B.5.D, B.6.B, B.7.D, B.13.D