

Course: BIOLOGY Sub-topic: Biology

Course

Course Requirement: Credit earned in Earth & Environment or Honors Earth & Environment

STANDARDS: STANDARDS

BIO.A.1 (Advanced) Basic Biological Principles

Minutes for Topic: 86

Minutes for Topic: 86

Minutes for Topic: 129

Minutes for Topic: 86

Minutes for Topic: 86

STANDARDS: STANDARDS

BIO.A.2 (Advanced) The Chemical Basis for Life

Minutes for Topic: 86

Minutes for Topic: 172

Minutes for Topic: 86

Minutes for Topic: 86

Unit: Unit 3-Biochemistry

STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

BIO.A.2 (Advanced)	The Chemical Basis for Life	
BIO.A.2.2.1 (Advanced)	Explain how carbon is uniquely suited to form biological macromolecules.	
BIO.A.2.2.2 (Advanced)	Describe how biological macromolecules form from monomers.	
BIO.A.2.2.3 (Advanced)	Compare the structure and function of carbohydrates, lipids, proteins, and nucleic acids in organisms.	
BIO.A.2.3 (Advanced)	Explain how enzymes regulate biochemical reactions within a cell.	
BIO.A.2.3.1 (Advanced)	Describe the role of an enzyme as a catalyst in regulating a specific biochemical reaction.	
BIO.A.2.3.2 (Advanced)	Explain how factors such as pH, temperature, and concentration levels can affect enzyme function.	

Topic: Carbohydrates

Minutes for Topic: 172

Topic: Lipids

Minutes for Topic: 86

Topic: Proteins and Enzymes

Minutes for Topic: 86

Topic: Nucleic Acids

Minutes for Topic: 86

Topic: Enzymes

Minutes for Topic: 172

Topic: Quest Review-Biochem**Topic: Quest****Unit: Unit 4-Cells**

Timeline: 1 Weeks

STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

BIO.A.1.2.2 (Advanced)	Describe and interpret relationships between structure and function at various levels of biological organization (i.e., organelles, cells, tissues, organs, organ systems, and multicellular organisms).	
BIO.A.3.1.1 (Advanced)	Describe the fundamental roles of plastids (e.g., chloroplasts) and mitochondria in energy transformations.	

Topic: Cell Structure and Function**Topic: Cell Organelles**

Minutes for Topic: 86

Topic: Cell Microscopy

Minutes for Topic: 86

Topic: Cell Organelle Practice

Minutes for Topic: 86

Topic: Cell Quest Review**Topic: Quest-Cells****Unit: Unit 5-Cell Transport****STANDARDS: STANDARDS**

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

BIO.A.4 (Advanced)	Homeostasis and Transport	
BIO.A.4.1 (Advanced)	Identify and describe the cell structures involved in transport of materials into, out of, and throughout a cell.	
BIO.A.4.1.1	Describe how the structure of the plasma membrane allows it	

(Advanced)

to function as a regulatory structure and/or protective barrier for a cell.

Topic: Cell Transport-Passive Transport

Minutes for Topic: 86

Topic: Cell-Transport Lab Investigation

Minutes for Topic: 172

Topic: Cell Transport-Active Transport

Minutes for Topic: 86

Topic: Quest Review

Minutes for Topic: 86

Topic: Quest on Cell Transport

Unit: Unit 6-Bioenergetics

STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

[BIO.A.3 \(Advanced\)](#) Bioenergetics

[BIO.A.3.1 \(Advanced\)](#) Identify and describe the cell structures involved in processing
energy.

[BIO.A.3.1.1 \(Advanced\)](#) Describe the fundamental roles of plastids (e.g., chloroplasts)
and mitochondria in energy transformations.

[BIO.A.3.2 \(Advanced\)](#) Identify and describe how organisms obtain and transform
energy for their life processes.

[BIO.A.3.2.1 \(Advanced\)](#) Compare the basic transformation of energy during
photosynthesis and cellular respiration.

Topic: Photosynthesis

Minutes for Topic: 172

Topic: Respiration

Minutes for Topic: 86

Topic: Photosynthesis and Cellular Respiration Script and Review

Minutes for Topic: 172

Topic: Quest Review-Photosynthesis

Minutes for Topic: 86

Topic: Quest-Photosynthesis and Cellular Respiration

Minutes for Topic: 86

Unit: Unit 7-Mitosis Meiosis

STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

[BIO.B.1 \(Advanced\)](#) Cell Growth and Reproduction

[BIO.B.1.1 \(Advanced\)](#) Describe the three stages of the cell cycle: interphase, nuclear
division, cytokinesis.

[BIO.B.1.1.1 \(Advanced\)](#) Describe the events that occur during the cell cycle:
interphase, nuclear division (i.e., mitosis or meiosis),
cytokinesis.

[BIO.B.1.1.2 \(Advanced\)](#) Compare the processes and outcomes of mitotic and meiotic
nuclear divisions.

Topic: Mitosis

Minutes for Topic: 258

Topic: Meiosis

Minutes for Topic: 258

Topic: Mitosis Meiosis Review

Minutes for Topic: 86

Topic: Meiosis Mitosis Quest
Minutes for Topic: 86

Unit: Unit 8-DNA Replication and Protein Synthesis

STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

BIO.B.1.2 (Advanced)	Explain how genetic information is inherited.	
BIO.B.1.2.1 (Advanced)	Describe how the process of DNA replication results in the transmission and/or conservation of genetic information.	
BIO.B.1.2.2 (Advanced)	Explain the functional relationships between DNA, genes, alleles, and chromosomes and their roles in inheritance.	
 		

This Curriculum Map Unit has no Topics to display

Unit: Unit 9- Mendelian Genetics

STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

BIO.B.1.2 (Advanced)	Explain how genetic information is inherited.	
BIO.B.2 (Advanced)	Genetics	
BIO.B.2.1 (Advanced)	Compare Mendelian and non-Mendelian patterns of inheritance.	
BIO.B.2.1.1 (Advanced)	Describe and/or predict observed patterns of inheritance (i.e., dominant, recessive, co-dominance, incomplete dominance, sex-linked, polygenic, and multiple alleles).	
BIO.B.2.3 (Advanced)	Explain how genetic information is expressed.	
 		

Topic: Monohybrid Crosses
Minutes for Topic: 172

Topic: Practice Crosses
Minutes for Topic: 172

Unit: Unit 10-Applied Genetics

STANDARDS: STANDARDS

STATE: Pennsylvania SAS Keystone Anchors (2010-2014)

BIO.B.1.2 (Advanced)	Explain how genetic information is inherited.	
BIO.B.2.1 (Advanced)	Compare Mendelian and non-Mendelian patterns of inheritance.	
BIO.B.2.1.1 (Advanced)	Describe and/or predict observed patterns of inheritance (i.e., dominant, recessive, co-dominance, incomplete dominance, sex-linked, polygenic, and multiple alleles).	
BIO.B.3.1.3 (Advanced)	Explain how genetic mutations may result in genotypic and phenotypic variations within a population.	
 		

Topic: Mendel Exceptions
Minutes for Topic: 258

Topic: Genetics Review
Minutes for Topic: 86

Topic: Genetics Quest
Minutes for Topic: 86

Unit: Unit 11-Biotechnology

Topic: genetic engineering
Minutes for Topic: 172

Topic: gel electrophoresis
Minutes for Topic: 172

Unit: Unit 12-Keystone review → Cell Energy, Parts of a Cell, Ecology

Topic: Keystone Review-Ecology
Minutes for Topic: 172

Unit: Unit 13-Keystone review → Evolution

Topic: Evolution Review
Minutes for Topic: 172

Unit:

This Curriculum Map Unit has no Topics to display