Biology Standard K

Curriculum Guide

Dunmore School District

Dunmore, PA

Biology Standard K

Prerequisite:

- 9th Grade General Science

Course Description:
This is a standard level Biology Keystone course designed to prepare students for proficient and advanced scoring on the Keystone Biology Exam.

Special Education:

After a student has been evaluated and found to be eligible for specially designed instruction under one of the 13 disability categories, an individualized education plan will be developed to help the student succeed through a more intense intervention program. Special Education is the practice of educating students in a way that addresses their individual differences and needs. The purpose of special education is to provide equal access to education for children ages birth through 21 by providing specialized services that will lead to school success in general education. Our goal for each student is for him/her to be educated in his/her least restrictive environment with additional supports by way of specially designed instruction. After all interventions in the general education setting have been exhausted and the student is still not making progress, students can receive direct instruction in a special education classroom. Direct instruction provides more intense intervention and replacement instruction in order to minimize skill deficits. In our special education classrooms, students will have access to the standards-based general education curriculum, as well as using various research-based intervention programs. Resources and activities will be adjusted based on individual student needs. Suggested time found within the curriculum will be adjusted as needed per individual student's needs.

Special Education Strategies can be located in the IEP Enhancements table located in Appendix: A at the end of this document.

Dunmore School District
Curriculum Guide

Year-at-a-glance

Subject: Biology Standard K	**Grade Level: 10**	**Date Completed: 4/8/2019**

1st Quarter

Topic	Resources	Anchors
Introduction to Biology	Approved text *BIOLOGY* SAS resources *Keystone Finish Line Biology* Unit 1 Worksheets Brain Pop	BIO.A.1.1.1 BIO.A.1.2.1 BIO.A.1.2.2
Levels of Organization	Approved text *BIOLOGY* SAS resources *Keystone Finish Line Biology* Unit 1 Worksheets Brain Pop	BIO.A.1.1.1 BIO.A.1.2.1 BIO.A.1.2.2
Chemistry of Life	Approved text *BIOLOGY* SAS resources *Keystone Finish Line Biology* Unit 2 Worksheets Brain Pop	BIO.A.2.1.1 BIO.A.2.2.1 BIO.A.2.2.2 BIO.A.2.2.3 BIO.A.2.3.1 BIO.A.2.3.2

2nd Quarter

Topic	Resources	Anchors
Cell Energy: Photosynthesis and Cellular Respiration	Approved text *BIOLOGY* SAS resources *Keystone Finish Line Biology* Unit 3 Worksheets Brain Pop	BIO.A.3.1.1 BIO.A.3.2.1 BIO.A.3.2.2
Cells and Cell Processes	Approved text *BIOLOGY* SAS resources *Keystone Finish Line Biology* Unit 1 Worksheets Brain Pop	BIO A.4.1.1 BIO.A.4.1.2 BIO.A.4.1.3 BIO.A.4.2.1

3rd Quarter

Topic	Resources	Anchors
Cell Growth and Division	Approved text *BIOLOGY* SAS resources *Keystone Finish Line Biology* Unit 5 Worksheets Brain Pop	BIO.B.1.1.1 BIO.B.1.1.2 BIO.B.1.2.1 BIO.B.1.2.2 BIO.B.2.2.1 BIO.B.2.2.2
DNA/RNA/Protein Synthesis	Approved text *BIOLOGY* SAS resources *Keystone Finish Line Biology* Unit 5 Worksheets Brain Pop	BIO.B.1.1.1 BIO.B.1.2.1 BIO.B.1.2.2 BIO.B.2.2.1 BIO.B.2.2.2
Genetics	Approved text *BIOLOGY* SAS resources *Keystone Finish Line Biology* Unit 6 Worksheets Brain Pop	BIO.B.1.2.2 BIO.B.2.1.1 BIO.B.2.1.2 BIO.B.2.3.1 BIO.B.3.1.3

4th Quarter

Topic	Resources	Anchors
Evolution	Approved text *BIOLOGY* SAS resources *Keystone Finish Line Biology* Unit 7 Labs Worksheets USA Test Prep Brain Pop	BIO.B.3.1.1 BIO.B.3.1.2 BIO.B.3.1.3 BIO.B.3.2.1 BIO.B.3.3.1
Genetic Engineering	Approved text *BIOLOGY* SAS resources *Keystone Finish Line Biology* Unit 6 Labs Worksheets USA Test Prep Brain Pop	BIO.B.2.3.1 BIO.B.2.4.1
Ecology	Approved text *BIOLOGY* SAS resources *Keystone Finish Line Biology* Unit 8 Labs Worksheets USA Test Prep Brain Pop	BIO.B.4.1.1 BIO.B.4.1.2 BIO.B.4.2.1 BIO.B.4.2.2 BIO.B.4.2.3 BIO.B.4.2.4 BIO.B.4.2.5
Review and Final Exam		

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Basic Biological Principles	**Anchor Descriptor:** BIO.A.1.1 Explain the characteristics common to all organisms. **PA Academic Standards: Science** 3.1.B.A1 Describe the common characteristics of life. Compare and contrast the cellular structures and degrees of complexity of prokaryotic and eukaryotic organisms. Explain that some structures in eukaryotic cells developed from early prokaryotic cells (e.g., mitochondria, chloroplasts) 3.1.B.C2 Describe the theory suggesting that life on Earth arose as a single, primitive prokaryote about 4 billion years ago and that for the next 2 billion years, a huge diversity of single-celled **organisms** evolved. Analyze how increasingly complex, multicellular organisms evolved once cells with nuclei	**Eligible Content:** BIO.A.1.1.1 Describe the characteristics of life shared by all prokaryotic and eukaryotic organisms. **Essential Knowledge/Skills:** Compare cellular structure and their functions in prokaryote and eukaryote cells. Create a model to explain, compare and contrast the structure and function of prokaryote and eukaryote cells. **Vocabulary:** Eukaryote Prokaryote	**Approved text *BIOLOGY* The Nature of Science Chapter 1** **SAS resources** ***Keystone Finish Line Biology* Unit 1**	**Teacher prepared tests** **Quizzes** **Worksheets**	**30 days**

	developed. 4.1.3.A Differentiate between the living and non-living components in an **environment** 4.1.4.A Explain what happens to an organism when its food supply, access to water, shelter or space (niche / habitat) is changed. Identify similarities and differences between living organisms, ranging from single-celled to multi-cellular organisms through the use of microscopes, video, and other media. **PA Core Standards: Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects**, **6-12** 3.6 Writing Students write for different purposes and audiences.				

	Students write clear and focused text to convey a well-defined perspective and appropriate content.				

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Basic Biological Principles (continued)	**Anchor Descriptor:** BIO.A.1.2 Describe relationships between structure and function at biological levels of organization. **PA Academic Standards: Science** 3.1.B.A1 Describe the common characteristics of life. Compare and contrast the cellular structures and degrees of complexity of prokaryotic and eukaryotic organisms. Explain that some structures in eukaryotic cells developed from early prokaryotic cells (e.g., mitochondria, chloroplasts) 3.1.B.A5 Relate the structure of cell organelles to their function (energy capture and release, transport, waste removal, protein synthesis, movement, etc.) Explain the role of water in cell metabolism. Explain how the cell membrane	**Eligible Content:** BIO.A.1.2.1 Compare cellular structures and their functions in prokaryotic and eukaryotic cells. BIO.A.1.2.2 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). **Vocabulary:** Cells Eukaryote Multicellular Organ Organ systems Organelle Prokaryote Tissues Unicellular			

	functions as a regulatory structure and protective barrier for the cell. Describe transport mechanisms across the plasma membrane. 3.1.B.A6 Explain how cells differentiate in multicellular organisms. 3.1.B.C2 Describe the theory suggesting that life on Earth arose as a single, primitive prokaryote about 4 billion years ago and that for the next 2 billion years, a huge diversity of single-celled **organisms** evolved. Analyze how increasingly complex, multicellular organisms evolved once cells with nuclei developed 4.1.4.A Explain how living things are dependent upon other living and nonliving things for survival. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and				

	respond to informational text- with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects**, **6-12** 3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.				

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
The Chemical Basis for Life	**Anchor Descriptor:** BIO.A.2.1 Describe how the unique properties of water support life on Earth. **PA Academic Standards: Science** 3.1.B.A8 Recognize that systems within cells and multicellular organisms interact to maintain homeostasis. Describe how the unique properties of water support life. 3.1.B.A5 Relate the structure of cell organelles to their function (energy capture and release, transport, waste removal, protein synthesis, movement, etc.) Explain the role of water in cell metabolism. Explain how the cell membrane functions as a regulatory structure and protective barrier for the cell. Describe transport mechanisms	**Eligible Content:** BIO.A.2.1.1 Describe the unique properties of water and how these properties support life on Earth (e.g., freezing point, high specific heat, cohesion). **Vocabulary:** polarity hydrogen bond adhesion cohesion surface tension capillary action high specific heat universal solvent macromolecule monomer polymer dehydration synthesis (condensation) hydrolysis monosaccharide amino acid nucleotide carbohydrates lipids proteins	**Approved text** ***BIOLOGY* The Chemistry of Life Chapter 2** **SAS resources** ***Keystone Finish Line Biology* Unit 2**	**Teacher prepared tests** **Quizzes** **Worksheets**	**25 days**

	across the plasma membrane. 4.2.5.C Identify physical, chemical, and biological factors that affect water quality. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects**, **6-12** 3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.	nucleic acids enzyme catalyst substrate activation energy active site reaction rates pH concentration			

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
The Chemical Basis for Life (continued)	**Anchor Descriptor:** BIO.A.2.2 Describe and interpret relationships between structure and function at various levels of biochemical organization (i.e., atoms, molecules, and macromolecules). **PA Academic Standards: Science** 3.1.B.A7 Analyze the importance of carbon to the structure of biological macromolecules. Compare and contrast the functions and structures of proteins, lipids, carbohydrates, and nucleic acids. 3.1.B.A8 Recognize that systems within cells and multicellular organisms interact to maintain homeostasis. Demonstrate the repeating patterns that occur in biological polymers. 3.1.B.A2 Explain why many biological macromolecules such as ATP and lipids contain high energy bonds.	**Eligible Content:** BIO.A.2.2.1 Explain how carbon is uniquely suited to form biological macromolecules. BIO.A.2.2.2 Describe how biological macromolecules form from monomers. BIO.A.2.2.3 Compare the structure and function of carbohydrates, lipids, proteins, and nucleic acids in organisms. **Vocabulary:** Amino acid Biological macromolecules Carbohydrates Catalyst Dehydration Enzymes Hydrolysis Lipids Monomers Nucleic acids Synthesis Polymers			

	Explain the importance of enzymes as catalysts in cell reactions. Identify how factors such as pH and temperature may affect enzyme function. 3.1.C.A2 **Describe how changes in energy affect the rate of chemical reactions.** 3.1.C.A7 Illustrate the formation of **carbohydrates, lipids, proteins**, and **nucleic** acids. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text- with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects**, **6-12** 3.6 Writing Students write for different purposes and audiences. Students write clear and focused				

	text to convey a well-defined perspective and appropriate content.				

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
The Chemical Basis for Life (continued)	**Anchor Descriptor:** BIO.A.2.3 Explain how enzymes regulate biochemical reactions within a cell. **PA Academic Standards: Science** 3.1.B.A2 Explain the importance of enzymes as catalysts in cell reactions. Identify how factors such as pH and temperature may affect enzyme function. 3.1.B.A7 Explain the consequences of extreme changes in pH and temperature on cell proteins. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for**	**Eligible Content:** BIO.A.2.3.1 Describe the role of an enzyme as a catalyst in regulating a specific biochemical reaction. BIO.A.2.3.2 Explain how factors such as pH, temperature, and concentration levels can affect enzyme function. **Vocabulary:** Catalyst Enzyme			

	Science and Technical Subjects, **6-12** 3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.				

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Bioenergetics	**Anchor Descriptor:** BIO.A.3.1 Identify and describe the cell structures involved in processing energy. **PA Academic Standards: Science** 3.1.B.A2 Identify the initial reactants, final products, and general purposes of photosynthesis and cellular respiration. Explain the important role of ATP in cell metabolism. Describe the relationship between photosynthesis and cellular respiration in photosynthetic organisms. 3.1.B.A5 Relate the structure of cell organelles to their function (energy capture and release, transport, waste removal, protein synthesis, movement, etc.) 3.1.C.A1 Explain the chemistry of **metabolism.**	**Eligible Content:** BIO.A.3.1.1 Describe the fundamental roles of plastids (e.g., chloroplasts) and mitochondria in energy transformations **Vocabulary:** mitochondria plastids chloroplasts photosynthesis cellular respiration metabolism anabolic reaction catabolic reaction chemical energy adenosine triphosphate (ATP) adenosine diphosphate (ADP)	**Approved text** ***BIOLOGY*** **Photosynthesis Chapter 8 and Cellular Respiration Chapter 9** **SAS resources** ***Keystone Finish Line Biology* Unit 3**	**Teacher prepared tests** **Quizzes** **Worksheets** **Lab Write-ups**	**16 days**

	PA Core Standards: **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text- with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects, 6-12** 3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.				

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Bioenergetics (continued)	**Anchor Descriptor:** BIO.A.3.2 Identify and describe how organisms obtain and transform energy for their life processes. **PA Academic Standards: Science** 3.1.B.A2 Identify the initial reactants, final products, and general purposes of photosynthesis and cellular respiration. Explain the important role of ATP in cell metabolism. Describe the relationship between photosynthesis and cellular respiration in photosynthetic organisms. 3.1.B.A5 Relate the structure of cell organelles to their function (energy capture and release, transport, waste removal, protein synthesis, movement, etc). 3.1.C.A1 Explain the chemistry of **metabolism.**	**Eligible Content:** BIO.A.3.2.1 Compare the basic transformation of energy during photosynthesis and cellular respiration. BIO.A.3.2.2 Describe the role of ATP in biochemical reactions. **Vocabulary:** Aerobic Bioenergetics Cellular respiration Glycolysis Krebs cycle Mitochondria Electron transport chain Chloroplast Krebs cycle Plastids			

	3.1.C.A2 Describe how changes in energy affect the rate of chemical reactions. 4.1.10.C Describe how energy is converted from one form to another as it moves through a **food web** (photosynthetic, geothermal). **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text- with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects**, **6-12** 3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.				

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Homeostasis and Transport	**Anchor Descriptors:** BIO.A.4.1 Identify and describe the cell structures involved in transport of materials into, out of, and throughout a cell. **PA Academic Standards: Science** 3.1.B.A5 Relate the structure of cell organelles to their function (energy capture and release, transport, waste removal, protein synthesis, movement, etc.) **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects, 6-12** 3.6 Writing Students write for different purposes and audiences. Students write clear and focused	**Eligible Content:** BIO.A.4.1.1 Describe how the structure of the plasma membrane allows it to function as a regulatory structure and/or protective barrier for a cell. BIO.A.4.1.2 Compare the mechanisms that transport materials across the plasma membrane (i.e., passive transport—diffusion, osmosis, facilitated diffusion; and active transport—pumps, endocytosis, exocytosis). BIO.A.4.1.3 Describe how membrane-bound cellular organelles (e.g., endoplasmic reticulum, Golgi apparatus) facilitate the transport of materials within a cell. **Vocabulary:** Plasma membrane (Phospholipid Bilayer) Fluid mosaic model Passive transport Diffusion Osmosis Facilitated Diffusion Active transport mechanisms Endocytosis	**Approved text** ***BIOLOGY* Cell Structure and Function Chapter 7** **SAS resources** ***Keystone Finish Line Biology* Unit 4**	**Teacher prepared tests** **Quizzes** **Worksheets**	**20 days**

	text to convey a well-defined perspective and appropriate content.	Exocytosis Endoplasmic Reticulum Rough ER Synthesis Smooth ER Golgi Apparatus			

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Homeostasis and Transport (continued)	**Anchor Descriptor:** BIO.A.4.2 Explain mechanisms that permit organisms to maintain biological balance between their internal and external environments. **PA Academic Standards: Science** 3.1.10.A Discriminate among the concepts of systems, subsystems, feedback and control in solving technological problems. 3.3.10.B Describe concepts of models as a way to predict and understand science and technology. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects, 6-12**	**Eligible Content:** BIO.A.4.2.1 Explain how organisms maintain homeostasis (e.g., thermoregulation, water regulation, oxygen regulation) **Vocabulary:** Homeostasis Thermoregulation Water regulation Oxygen regulation			

	3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.				

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Cell Growth and Reproduction	**Anchor Descriptor:** BIO.B.1.1 Describe the three stages of the cell cycle: interphase, nuclear division, cytokinesis. **PA Academic Standards: Science** 3.1.10.A Discriminate among the concepts of systems, subsystems, feedback and control in solving technological problems. 3.3.10.C Apply patterns as repeated processes or recurring elements in science and technology. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects, 6-12**	**Eligible Content:** BIO.B.1.1.1 describe the events that occur during the cell cycle: interphase, nuclear division (i.e., mitosis or meiosis), cytokinesis BIO.B.1.1.2 Compare the processes and outcomes of mitotic and meiotic nuclear divisions. **Vocabulary:** Anaphase Cell cycle Cytokinesis Diploid Interphase Metaphase Mitosis Nuclear division Prophase Telophase	**Approved text** ***BIOLOGY* Cell Growth and Division Chapter 10** **SAS resources** ***Keystone Finish Line Biology* Unit 5**	**Teacher prepared tests** **Quizzes** **Worksheets**	**24 days**

	3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.				

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Cell Growth and Reproduction (continued)	**Anchor Descriptor:** BIO.B.1.2 Explain how genetic information is inherited. **PA Academic Standards: Science** 3.3.10.A Discriminate among the concepts of systems, subsystems, feedback and control in solving technological problems. 3.3.10.B Describe concepts of models as a way to predict and understand science and technology. 3.3.10.C Apply patterns as repeated processes or recurring elements in science and technology. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.	**Eligible Content:** BIO.B.1.2.1 Describe how the process of DNA replication results in the transmission and/or conservation of genetic material BIO.B.1.2.2 Explain the functional relationships between DNA, genes, alleles, and chromosomes and their roles in inheritance. **Vocabulary:** DNA sequence Gene Genetic Information Inheritance Nucleotide Protein RNA Translation Transcription Uracil			

	PA Core Standards: Writing for Science and Technical Subjects, 6-12 3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.				

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Genetics	**Anchor Descriptor:** BIO.B.2.1 Compare Mendelian and non-Mendelian patterns of inheritance. **PA Academic Standards: Science** 3.3.10.C Apply patterns as repeated processes or recurring elements in science and technology. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects**, **6-12** 3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate	**Eligible Content:** BIO.B.2.1.1 describe and/or predict observed patterns of inheritance (i.e., dominant, recessive, co-dominance, incomplete dominance, sex-linked, polygenic, and multiple alleles). BIO.B.2.1.2 Describe processes that can alter composition or number of chromosomes (i.e., crossing-over, nondisjunction, duplication, translocation, deletion, insertion, and inversion). **Vocabulary:** Allele Chromosome DNA Dominant allele Gene Gene expression Genotype Recessive allele Trait Phenotype Crossing-over Deletion Duplication	**Approved text** ***BIOLOGY* Intro to Genetics Chapter 11 and Human Heredity Chapter 14** **SAS resources** ***Keystone Finish Line Biology* Unit 6**	**Teacher prepared tests** **Quizzes** **Worksheets**	**20 days**

	content.	Haploid Homologous chromosomes Insertion Inversion Meiosis Nondisjunction Translocation			

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Genetics (continued)	**Anchor Descriptor:** BIO.B.2.2 Explain the process of protein synthesis (i.e., transcription, translation, and protein modification). **PA Academic Standards: Science** 3.3.10.C Apply patterns as repeated processes or recurring elements in science and technology. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects**, **6-12** 3.6 Writing Students write for different purposes and audiences. Students write clear and focused	**Eligible Content:** BIO.B.2.2.1 Describe how the processes of transcription and translation are similar in all organisms. BIO.B.2.2.2 Describe the role of ribosomes, endoplasmic reticulum, Golgi apparatus, and the nucleus in the production of specific types of proteins. **Vocabulary:** Endoplasmic reticulum Golgi apparatus Nucleus Protein Ribosomes Transcription Translation			

	text to convey a well-defined perspective and appropriate content.				

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Genetics (continued)	**Anchor Descriptor:** BIO.B.2.3 Explain how genetic information is expressed. **PA Academic Standards: Science** 3.3.10.C Apply patterns as repeated processes or recurring elements in science and technology. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects**, **6-12** 3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.	**Eligible Content:** BIO.B.2.3.1 Describe how genetic mutations alter the DNA sequence and may or may not affect phenotype (e.g., silent, nonsense, frame-shift). **Vocabulary:** Chromosomes Chromosomal mutation DNA Frame-shift mutation Haploid cells Homologous Meiosis Mutation Point mutation			

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Genetics (continued)	**Anchor Descriptor:** BIO.B.2.4 Apply scientific thinking, processes, tools, and technologies in the study of genetics. **PA Academic Standards: Science** 3.3.10.C Apply patterns as repeated processes or recurring elements in science and technology. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects**, **6-12** 3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate	**Eligible Content:** BIO.B.2.4.1 Explain how genetic engineering has impacted the fields of medicine, forensics, and agriculture (e.g., selective breeding, gene splicing, cloning, genetically modified organisms, gene therapy). **Vocabulary:** Selective breeding Hybridization Inbreeding Biotechnology Recombinant DNA Gene Therapy DNA fingerprinting Forensics Cloning GMO's			

	content.				

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Theory of Evolution	**Anchor Descriptor:** BIO.B.3.1 Explain the mechanisms of evolution. **PA Academic Standards: Science** 3.3.10.C Apply patterns as repeated processes or recurring elements in science and technology. 3.3.10.D Apply scale as a way of relating concepts and ideas to one another by some measure. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects, 6-12** 3.6 Writing Students write for different purposes and audiences.	**Eligible Content:** BIO.B.3.1.1 Explain how natural selection can impact allele frequencies of a population. BIO.B.3.1.2 Describe the factors that can contribute to the development of new species (e.g., isolating mechanisms, genetic drift, founder effect, migration). BIO.B.3.1.3 Explain how genetic mutations may result in genotypic and phenotypic variations within a population **Vocabulary:** Allele frequency Evolution Genetic drift Founder effect Isolating Mechanisms Migration Natural Selection	**Approved text** ***BIOLOGY* Darwin's Theory of Evolution Chapter 16 and Evolution of Populations Chapter 17** **SAS resources** ***Keystone Finish Line Biology* Unit 7**	**Teacher prepared tests** **Quizzes** **Worksheets**	**8 days**

	Students write clear and focused text to convey a well-defined perspective and appropriate content.				

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Theory of Evolution (continued)	**Anchor Descriptor:** BIO.B.3.2 Analyze the sources of evidence for biological evolution. **PA Academic Standards: Science** 3.3.10.D Apply scale as a way of relating concepts and ideas to one another by some measure. 3.5.10.A Relate earth features and processes that change the earth. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects, 6-12** 3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined	**Eligible Content:** BIO.B.3.2.1 Interpret evidence supporting the theory of evolution (i.e., fossil, anatomical, physiological, embryological, biochemical, and universal genetic code). **Vocabulary:** Evolution Fossil Genetic Code			

	perspective and appropriate content.				

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Theory of Evolution (continued)	**Anchor Descriptor:** BIO.B.3.3 Apply scientific thinking, processes, tools, and technologies in the study of the theory of evolution. **PA Academic Standards: Science** 3.3.10.D Apply scale as a way of relating concepts and ideas to one another by some measure. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects, 6-12** 3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate	**Eligible Content:** BIO.B.3.3.1 Distinguish between the scientific terms: hypothesis, inference, law, theory, principle, fact, and observation. **Vocabulary:** Fact Hypothesis Inference Law Observation Principle Theory			

	content.				

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Ecology	**Anchor Descriptor:** BIO.B.4.1 Describe ecological levels of organization in the biosphere. **PA Academic Standards: Science** 3.1.10.A Discriminate among the concepts of systems, subsystems, feedback and control in solving technological problems. 3.3.10.D Explain the mechanisms of the theory of evolution. 4.6.10.A Explain the biotic and abiotic components of an ecosystem and their interaction. 4.6.10.B Explain how cycles affect the balance in an ecosystem 4.6.10.C Analyze how ecosystems change over time. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.	**Eligible Content:** BIO.B.4.1.1 Describe the levels of ecological organization (i.e., organism, population, community, ecosystem, biome, and biosphere) BIO.B.4.1.2 Describe characteristic biotic and abiotic components of aquatic and terrestrial ecosystems. **Vocabulary:** Abiotic Biotic Biosphere Biome Community Ecosystem Organism Population	**Approved text** ***BIOLOGY* Biosphere** **Chapter 3 Ecosystems and Communities** **Chapter 4 Population** **Chapter 5 and Humans in the Biosphere** **Chapter 6** **SAS resources** ***Keystone Finish Line Biology* Unit 8**	**Teacher prepared tests** **Quizzes** **Worksheets**	**25 days**

	PA Core Standards: Writing for Science and Technical Subjects, 6-12 3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.				

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Ecology (continued)	**Anchor Descriptor:** BIO.B.4.2 Describe interactions and relationships in an ecosystem **PA Academic Standards: Science** 4.6.10.A Explain the biotic and abiotic components of an ecosystem and their interaction. 4.6.10.B Explain how cycles affect the balance in an ecosystem. 4.6.10.C Analyze how ecosystems change over time. **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects, 6-12** 3.6 Writing Students write for different purposes and audiences.	**Eligible Content:** BIO.B.4.2.1 Describe how energy flows through an ecosystem (e.g., food chains, food webs, energy pyramids). BIO.B.4.2.2 Describe biotic interactions in an ecosystem (e.g., competition, predation, symbiosis). BIO.B.4.2.3 Describe how matter recycles through an ecosystem (i.e., water cycle, carbon cycle, oxygen cycle, and nitrogen cycle). BIO.B.4.2.4 Describe how ecosystems change in response to natural and human disturbances (e.g., climate changes, introduction of nonnative species, pollution, fires). BIO.B.4.2.5 Describe the effects of limiting factors on population dynamics and potential species extinction. **Vocabulary:** Biosphere Carbon cycle Hydrologic cycle Invasive Species			

	Students write clear and focused text to convey a well-defined perspective and appropriate content.	Nitrogen cycle Nonnative Species Biogeochemical cycles Energy Food Chain Food web Predation			

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Keystone Review and Testing Window	**Anchor Descriptor:** **All Anchors Reviewed for Keystone Testing** **PA Academic Standards: Science** **PA Core Standards:** **Reading for Science and Technical Subjects, 6-12** 3.5 Reading Informational Text Students read, understand, and respond to informational text- with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence. **PA Core Standards: Writing for Science and Technical Subjects**, **6-12** 3.6 Writing Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.	**Eligible Content:** **All Anchors Reviewed for Keystone Testing**			**5 days**

General Topic	Anchor Descriptor PA Academic and Core Standards	Eligible Content, Essential Knowledge, Skills & Vocabulary	Resources & Activities	Assessments	Suggested Time (In Days)
Review and Final Exam					**7 days**

PA Core Standards:
Reading for Science and Technical Subjects, 6-12

3.5 Reading Informational Text
Students read, understand, and respond to informational text-with emphasis on comprehension, making connections among ideas and between texts with focus on textual evidence.

Grades 6-8

CC.3.5.6-8.A.
Cite specific textual evidence to support analysis of science and technical texts.

CC.3.5.6-8.B.
Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

CC.3.5.6-8.C.
Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

CC.3.5.6-8.D.
Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.

CC.3.5.6-8.E.
Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

CC.3.5.6-8.F.
Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.

CC.3.5.6-8.G.
Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

CC.3.5.6-8.H.
Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

CC.3.5.6-8.I.
Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

CC.3.5.6-8.J.
By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.

Grades 9-10

CC.3.5.9-10.A.
Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

CC.3.5.9-10.B.
Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

CC.3.5.9-10.C.
Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

CC.3.5.9-10.D.
Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.

CC.3.5.9-10.E.
Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

CC.3.5.9-10.F.
Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.

CC.3.5.9-10.G.

Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

CC.3.5.9-10.H.
Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.

CC.3.5.9-10.I.
Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

CC.3.5.9-10.J.
By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.

Grades 11-12

CC.3.5.11-12.A.
Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

CC.3.5.11-12.B.
Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

CC.3.5.11-12.C.
Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

CC.3.5.11-12.D.
Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.

CC.3.5.11-12.E.
Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.

CC.3.5.11-12.F.
Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.

CC.3.5.11-12.G.
Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

CC.3.5.11-12.H.
Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

CC.3.5.11-12.I.
Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

CC.3.5.11-12.J.
By the end of grade 12, read and comprehend science/technical texts in the grades 11–12 text complexity band independently and proficiently.

PA Core Standards:
Writing for Science and Technical Subjects, 6-12

3.6 Writing
Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content.

Grades 6-8

CC.3.6.6-8.A.
Write arguments focused on discipline-specific content.

- Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.
- Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.
- Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.
- Establish and maintain a formal style.
- Provide a concluding statement or section that follows from and supports the argument presented.

CC.3.6.6-8.B. *
Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

- Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
- Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
- Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.
- Use precise language and domain-specific vocabulary to inform about or explain the topic.
- Establish and maintain a formal style and objective tone.
- Provide a concluding statement or section that follows from and supports the information or explanation presented.

CC.3.6.6-8.C.
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CC.3.6.6-8.D.

With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.

CC.3.6.6-8.E.
Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

CC.3.6.6-8.F.
Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

CC.3.6.6-8.G.
Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

CC.3.6.6-8.H.
Draw evidence from informational texts to support analysis reflection, and research.

CC.3.6.6-8.J.I.
Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Grades 9-10

CC.3.6.9-10.A.
Write arguments focused on discipline-specific content.

- Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence.
- Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns.
- Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
- Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- Provide a concluding statement or section that follows from or supports the argument presented.

CC.3.6.9-10B. *
Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

- Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
- Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
- Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts.
- Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.
- Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

CC.3.6.9-10.C.
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CC.3.6.9-10.D.
Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience

CC.3.6.9-10.E.
Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

CC.3.6.9-10.F.
Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

CC.3.6.9-10.G.
Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.

CC.3.6.9-10.H.
Draw evidence from informational texts to support analysis, reflection, and research.

CC.3.6.9-10.I.
Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Grades 11-12

CC.3.6.11-12.A.
Write arguments focused on discipline-specific content.

- Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.
- Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.
- Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
- Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- Provide a concluding statement or section that follows from or supports the argument presented.

CC.3.6.11-12. B *Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

- Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
- Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
- Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
- Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.
- Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic)

CC.3.6.11-12.C.

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CC.3.6.11-12.D.
Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

CC.3.6.11-12.E.
Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

CC.3.6.11-12.F.
Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

CC.3.6.11-12.G.
Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

CC.3.6.11-12.H.
Draw evidence from informational texts to support analysis, reflection, and research.

CC.3.6.11-12.I.
Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Appendix: A			
IEP Enhancements			
General Topic:	**Specially Designed Instruction:**	**Additional Vocabulary:**	**Assessments/Suggested Time:**
Basic Biological Principles	• Preferential Seating • Additional text for home • Online Videos • Computer use when available • Multi-modality instruction including modeling, explicit instruction, repetition, rephrasing, visual cues, and chunking of material. • Directions read aloud and clarified • Use of Computer (when needed) • Closed captioning for videos		**Assessments:** • Adapted assessments in accordance with the student's IEP • Extended time to complete **Suggested Time:** 30 days as specified in curriculum with additional time as needed per individual student
The Chemical Basis for Life	• Preferential Seating • Additional text for home • Online Videos • Computer use when available • Multi-modality instruction including modeling, explicit instruction, repetition, rephrasing, visual cues, and chunking of material. • Directions read aloud and clarified • Use of Computer (when needed) • Closed captioning for videos		**Assessments:** • Adapted assessments in accordance with the student's IEP • Extended time to complete **Suggested Time:** 25 days as specified in curriculum with additional time as needed per individual student
Bioenergetics	• Preferential Seating • Additional text for home • Online Videos • Computer use when available • Multi-modality instruction including modeling, explicit instruction, repetition, rephrasing, visual cues, and chunking of material. • Directions read aloud and clarified • Use of Computer (when needed) • Closed captioning for videos		**Assessments:** • Adapted assessments in accordance with the student's IEP • Extended time to complete **Suggested Time:** 16 days as specified in curriculum with additional time as needed per individual student

General Topic:	Specially Designed Instruction:	Additional Vocabulary:	Assessments/Suggested Time:
Homeostasis and Transport	• Preferential Seating • Additional text for home • Online Videos • Computer use when available • Multi-modality instruction including modeling, explicit instruction, repetition, rephrasing, visual cues, and chunking of material. • Directions read aloud and clarified • Use of Computer (when needed) • Closed captioning for videos		**Assessments:** • Adapted assessments in accordance with the student's IEP • Extended time to complete **Suggested Time:** **20 days as specified in curriculum with additional time as needed per individual student**
Cell Growth and Reproduction	• Preferential Seating • Additional text for home • Online Videos • Computer use when available • Multi-modality instruction including modeling, explicit instruction, repetition, rephrasing, visual cues, and chunking of material. • Directions read aloud and clarified • Use of Computer (when needed) • Closed captioning for videos		**Assessments:** • Adapted assessments in accordance with the student's IEP • Extended time to complete **Suggested Time:** **24 days as specified in curriculum with additional time as needed per individual student**
Genetics	• Preferential Seating • Additional text for home • Online Videos • Computer use when available • Multi-modality instruction including modeling, explicit instruction, repetition, rephrasing, visual cues, and chunking of material. • Directions read aloud and clarified • Use of Computer (when needed) • Closed captioning for videos		**Assessments:** • Adapted assessments in accordance with the student's IEP • Extended time to complete **Suggested Time:** **20 days as specified in curriculum with additional time as needed per individual student**

General Topic:	Specially Designed Instruction:	Additional Vocabulary:	Assessments/Suggested Time:
Theory of Evolution	• Preferential Seating • Additional text for home • Online Videos • Computer use when available • Multi-modality instruction including modeling, explicit instruction, repetition, rephrasing, visual cues, and chunking of material. • Directions read aloud and clarified • Use of Computer (when needed) • Closed captioning for videos		**Assessments:** • Adapted assessments in accordance with the student's IEP • Extended time to complete **Suggested Time:** **8 days as specified in curriculum with additional time as needed per individual student**
Ecology	• Preferential Seating • Additional text for home • Online Videos • Computer use when available • Multi-modality instruction including modeling, explicit instruction, repetition, rephrasing, visual cues, and chunking of material. • Directions read aloud and clarified • Use of Computer (when needed) • Closed captioning for videos		**Assessments:** • Adapted assessments in accordance with the student's IEP • Extended time to complete **Suggested Time:** **25 days as specified in curriculum with additional time as needed per individual student**
Keystone Review and Testing Window	• Preferential Seating		**Assessments:** • Adapted assessments in accordance with the student's IEP • Extended time to complete **Suggested Time:** **5 days as specified in curriculum with additional time as needed per individual student**
Review and Final Exam	**As listed above**		