

Essential Standards Chart: What is it we expect students to learn?

Grade:	9-12	Subject:	CP Biology	Semester	Q2	Team Members:	Addington		
							Domek		
							Durham		
Standard/ Description		Example/ Rigor		Prior Skills Needed		Common Assessment		When Taught?	Enrichment
What is the essential standard to be learned? Describe in student-friendly vocabulary.		What does proficient student work look like? Provide an example and/or description.		What prior knowledge, skills, and/or vocabulary is/are needed for a student to master this standard?		What assessment(s) will be used to measure student mastery?		When will this standard be taught?	What will we do when students have learned the essential standard(s)?
I understand how genetic information is transmitted from one generation to the next.		<ol style="list-style-type: none"> Describe Mendel's contributions to genetics. Compare and contrast Mendel's two laws of heredity. Define probability. Use a Punnett Square to predict the outcome of a genetic cross. Identify factors that influence patterns of heredity Explain how mutations can cause genetic diseases. Identify some important genetic disorders and their symptoms. 		<p>PK: Students know how DNA conveys genetic information across generations. Students know how sex cells are produced.</p> <p>VOCAB: genetics, monohybrid, allele, dominant, recessive, homo/heterozygous, genotype, phenotype, Punnett Square, pedigree</p>		BIO C-A (8-1 & 8-2): Mendel's Work BIO C-A (8-3&8-4): Studying Heredity		WEEK 10/11	
I understand the chemistry of genes.		<ol style="list-style-type: none"> Describe the composition and structure of a DNA molecule. Explain the base-pairing rule. Name the major scientists involved in the discovery of DNA. Summarize the process of DNA replication. Describe how mutations of a gene might occur. 		<p>PK: Students should know that DNA is the genetic material and is universal across kingdoms. Students know that the function of DNA is important in biology.</p> <p>VOCAB: DNA, nucleotides, double helix, adenine, thymine, cytosine, guanine, complementary, base-pairing</p>		BIO C-A (Chp9): DNA		WEEK 11/12	
I understand the process of gene expression.		<ol style="list-style-type: none"> Identify the 3 types of RNA and their functions. Summarize the process of transcription and translation. Discuss the importance of regulating gene expression. Describe how the mutation of genes can affect cell division. Define genetic engineering. List some ways scientists use <i>g.e.</i> to produce medical and agricultural products. 		<p>PK: Students know the structure of DNA and that it carries information for making proteins. Students should know the base-pairing process. Students should know that proteins are built on a ribosome.</p> <p>VOCAB: RNA, gene expression, transcription, translation, codon, polymerase, mRNA, tRNA, uracil, intron, exon, mutation</p>				WEEK 13	
I understand theories about the origin of life on Earth.		<ol style="list-style-type: none"> Identify three possible origins of life on Earth. Explain how the first proteins 		<p>PK: Students know that the earth is billions of years old, that organisms have changed over time, and that fossils are the key to</p>				WEEK 14	

	<p>may have formed.</p> <ol style="list-style-type: none"> 3. Describe how cellular organization might have begun. 4. Recognize the importance of the development of heredity. 5. Explain how radiometric dating can be used in determining the age and history of the earth. 	<p>understanding the past.</p> <p>VOCAB: radiometric dating, isotopes, fossils, endosymbiosis, extinction, mass extinction, protist, cyanobacteria, mutualism, vertebrate, arthropod</p>			
<p>I understand the principles of evolution.</p>	<ol style="list-style-type: none"> 1. Summarize the modern theory of evolution. 2. Identify several observations that led Darwin to conclude that species evolve. 3. Describe the process of natural selection and its outcome. 4. Describe how fossil evidence and comparative anatomy supports evolution. 5. Describe the process of species formation. 6. Describe how environmental conditions can affect the evolution of species. 7. Identify a likely evolutionary timeline. 	<p>PK: Students know that the fossil record provides a geological sequence of evolution and that Charles Darwin developed the idea of evolution through natural selection by studying organisms such as Galapagos finches.</p> <p>VOCAB: natural selection, adaptation, homologous/vestigial structures, gradualism, punctuated equilibrium divergence, speciation, population, subspecies, reproductive isolation.</p>		<p>WEEK 15/16</p>	
<p>I understand the interactions between living things and their environment.</p>	<ol style="list-style-type: none"> 1. Understand causes of population fluctuations. 2. Recognize the biodiversity of ecosystems. 3. Distinguish between producers and consumers and their effect on an energy pyramid. 4. Explain how materials cycle between the biotic and abiotic environment. 5. Explain the influence of physical features of an environment on the types of organisms that live there. 6. List major ways humans are creating global change. 7. Discuss important examples of environmental problems. 8. Discuss ways of solving environmental problems. 	<p>PK: Students know that the world has a wide diversity of ecosystems and populations. Students know that there are cycles in nature involving the atmosphere, biosphere and physical landscape.</p> <p>VOCAB: ecology, ecosystem, habitat, biotic/abiotic factor, food chain, food web, producer, consumer, herbivore, carnivore, decomposer, biomass, energy pyramid, biodiversity.</p>		<p>WEEK 17/18</p>	