

Northeast High School 2019-2020 Biology Pacing Guide 2nd Semester

Unit	Dates	Pearson Biology Book Chapters	Topic	Standards
<p align="center">3 Ecology (27% of EOC)</p>	<p align="center">1/7 - 2/21</p>	<p>Chapter 5 & 6</p> <p>Chapter 3</p> <p>Chapter 4 & 6</p> <p>Chapter 6</p>	<p>3.1 Factors affecting Biodiversity and Populations in Ecosystems</p> <p>a. The Importance of Biodiversity</p> <p>b. Carrying capacity</p> <p>c. Keystone Species</p> <p>b. Human Impact on Biodiversity</p> <p>3.2 Flow of Energy within Ecosystems</p> <p>a. Ecology</p> <p>b. Trophic levels</p> <p>c. Energy Transfer</p> <p>d. Ecological Pyramids</p> <p>e. Biogeochemical Cycles</p> <p>3.3 Environmental Change on the Stability of an Ecosystem</p> <p>a. Ecological Succession</p> <p>b. Climate Change</p> <p>c. Global Warming</p> <p>3.4 Human Impact on the Environment</p> <p>a. Chemical Use impact on Environment</p> <p>b. Natural Resources Consumption</p> <p>c. Invasive Species</p>	<p>SB5. Obtain, evaluate, and communicate information to assess the interdependence of all organisms on one another and their environment. (3.1)</p> <p>a. Plan and carry out investigations and analyze data to support explanations about factors affecting biodiversity and populations in ecosystems. (Clarification statement: Factors include population size, carrying capacity, response to limiting factors, and keystone species.)</p> <p>SB5. Obtain, evaluate, and communicate information to assess the interdependence of all organisms on one another and their environment. (3.2)</p> <p>b. Develop and use models to analyze the cycling of matter and flow of energy within ecosystems through the processes of photosynthesis and respiration.</p> <ul style="list-style-type: none"> • Arranging components of a food web according to energy flow. • Comparing the quantity of energy in the steps of an energy pyramid. • Explaining the need for cycling of major biochemical elements (C, O, N, P, and H). <p>SB5. Obtain, evaluate, and communicate information to assess the interdependence of all organisms on one another and their environment. (3.3)</p> <p>c. Construct an argument to predict the impact of environmental change on the stability of an ecosystem.</p> <p>SB5. Obtain, evaluate, and communicate information to assess the interdependence of all organisms on one another and their environment. (3.4)</p>

				d. Design a solution to reduce the impact of a human activity on the environment. (Clarification statement: Human activities may include chemical use, natural resources consumption, introduction of non-native species, greenhouse gas production.)
Unit 4 Part 1 Evolution (17% of EOC)	2/24 - 3/13	Chapter 19	4.1 A Changing Earth & Evidence of Evolution a. History of Life b. Comparative Morphology c. Embryology d. Biochemistry	<p>SB6. Obtain, evaluate, and communicate information to assess the theory of evolution. (4.1)</p> <p>a. Construct an explanation of how new understandings of Earth’s history, the emergence of new species from pre-existing species, and our understanding of genetics have influenced our understanding of biology.</p> <p>c. Construct an argument using valid and reliable sources to support the claim that evidence from comparative morphology (analogous vs. homologous structures), embryology, biochemistry (protein sequence) and genetics support the theory that all living organisms are related by way of common descent</p> <p>SB6. Obtain, evaluate, and communicate information to assess the theory of evolution. (4.2)</p> <p>b. Analyze and interpret data to explain patterns in biodiversity that result from speciation.</p> <p>e. Develop a model to explain the role natural selection plays in causing biological resistance (e.g., pesticides, antibiotic resistance, and influenza vaccines).</p> <p>SB6. Obtain, evaluate, and communicate information to assess the theory of evolution. (4.3)</p> <p>d. Develop and use mathematical models to support explanations of how undirected genetic changes in natural selection and genetic drift have led to changes in populations of organisms. (Clarification statement: Element is intended to focus on basic statistical and graphic analysis. Hardy Weinberg would be an optional application to address this element.)</p>
		Chapter 16	4.2 Natural Selection & Biological Resistance a. Darwin’s Theory of Evolution b. Biological Resistance	
		Chapter 17	4.3 Undirected Genetic Changes a. Bottleneck Effect b. Founder’s Effect c. Gene Flow d. Hardy-Weinberg Equilibrium	

Unit 4 Part 2 Classification & Phylogeny (13% of EOC)	3/16 - 3/27	Chapter 18	5.1 Classification & Phylogeny a. Taxonomy – Finding Order in Diversity b. Endosymbiosis c. Cladograms and Phylogenetic Trees	SB4. Obtain, evaluate, and communicate information to illustrate the organization of interacting systems within single-celled and multi-celled organisms. (5.1) a. Construct an argument supported by scientific information to explain patterns in structures and function among clades of organisms, including the origin of eukaryotes by endosymbiosis. Clades should include: <ul style="list-style-type: none"> ♣ archaea ♣ bacteria ♣ eukaryotes <ul style="list-style-type: none"> • fungi • plants • animals (Clarity statement: This is reflective of 21st century classification schemes and nested hierarchy of clades and is intended to develop a foundation for comparing major groups of organisms. The term 'protist' is useful in describing those eukaryotes that are not within the animal, fungal or plant clades but the term does not describe a well-defined clade or a natural taxonomic group.) SB4. Obtain, evaluate, and communicate information to illustrate the organization of interacting systems within single-celled and multi-celled organisms. (5.1) b. Analyze and interpret data to develop models (i.e., cladograms and phylogenetic trees) based on patterns of common ancestry and the theory of evolution to determine relationships among major groups of organisms.
3/30 - 4/3		(Spring Break – Cells Review Packet = March 30 – April 3, 2020)		
Week 30 - 4/6 – 4/10		Cells Review		
Week 31 - 4/13 – 4/17		Cellular Genetics Review		
Week 32 - 4/20 – 4/24		Heredity Review		
Week 33 - 4/27 – 5/1		Ecology Review		
Week 34 - 5/4 – 5/8		Georgia Milestones		