

Northeast High School 2019-2020 Biology Pacing Guide 1st Semester

Unit	Dates	Pearson Biology Book Chapters	Topic	Standards
0 Biology Intro	8/1 - 8/2		Classroom Rules & Procedures, Introduction to Biology, Introduction to the Light Microscope	
1 Cells (20% of EOC)	8/5 - 10/18	<p>Chapter 2</p> <p>Chapter 7</p> <p>Chapter 7</p> <p>Chapter 8</p> <p>Chapter 9</p>	<p>1.1 The Chemistry of Life a. Properties of Water b. Carbon Compounds c. Chemical Reactions & Enzymes</p> <p>1.2 Cell Structure & Function a. Life is Cellular b. Cell Structure c. Cell Transport</p> <p>1.3 Homeostasis a. Cell Membrane b. Homeostasis c. Feedback Inhibition</p> <p>1.4 Photosynthesis a. Chemical Energy & ATP b. Photosynthesis & Respiration Overview c. The Process of Photosynthesis d. Photosynthesis Under Extreme Conditions</p> <p>1.5 Cellular Respiration & Fermentation a. Photosynthesis and Cellular Respiration Comparison</p>	<p>SB1. Obtain, evaluate, and communicate information to analyze the nature of the relationships between structures and functions in living cells. c. Construct arguments supported by evidence to relate the structure of macromolecules (carbohydrates, proteins, lipids, and nucleic acids) to their interactions in carrying out cellular processes. (Clarification statement: The function of proteins as enzymes is limited to a conceptual understanding.)</p> <p>SB1. Obtain, evaluate, and communicate information to analyze the nature of the relationships between structures and functions in living cells. a. Construct an explanation of how cell structures and organelles (including nucleus, cytoplasm, cell membrane, cell wall, chloroplasts, lysosome, Golgi, endoplasmic reticulum, vacuoles, ribosomes, and mitochondria) interact as a system to maintain homeostasis.</p> <p>SB1. Obtain, evaluate, and communicate information to analyze the nature of the relationships between structures and functions in living cells. d. Plan and carry out investigations to determine the role of cellular transport (e.g., active, passive, and osmosis) in maintaining homeostasis.</p>

		Chapter 10	<p>b. The Process of Cellular Respiration c. Fermentation</p> <p>1.6 Cell Growth and Division a. The Process of Cell Division (Mitosis) b. Cancer and Cell Cycle Regulation</p>	<p>SB1. Obtain, evaluate, and communicate information to analyze the nature of the relationships between structures and functions in living cells. e. Ask questions to investigate and provide explanations about the roles of photosynthesis and respiration in the cycling of matter and flow of energy within the cell (e.g., single-celled alga). (Clarification statement: Instruction should focus on understanding the inputs, outputs, and functions of photosynthesis and respiration and the functions of the major sub-processes of each including glycolysis, Krebs cycle, electron transport chain, light reactions, and Calvin cycle.)</p> <p>SB1. Obtain, evaluate, and communicate information to analyze the nature of the relationships between structures and functions in living cells. b. Develop and use models to explain the role of cellular reproduction (including binary fission, mitosis, and meiosis) in maintaining genetic continuity.</p>
Cells Review Packet	Fall Break 10/7 - 10/11		<i>Cells Review Packet to be completed during fall break</i>	
Unit	Dates	Pearson Biology Book Chapters	Topic	Standards
2 Cellular Genetics & Heredity Part 1 Genetics	10/21 - 11/22	Chapter 13 Chapters 13 & 14	<p>2.1 Protein Synthesis a. The Structure and Function of DNA & RNA b. Protein Synthesis and Ribosomes</p> <p>2.2 Genetic Mutations a. Genetic Mutations</p>	<p>SB2. Obtain, evaluate, and communicate information to analyze how genetic information is expressed in cells. a. Construct an explanation of how the structures of DNA and RNA lead to the expression of information within the cell via the processes of replication, transcription, and translation.</p>

(23% of EOC)		Chapter 15	<p>b. Human Genetic Disorders (Chromosome mutations) c. Analyzing Karyotypes</p> <p>2.3 Biotechnology a. Artificial Selection (Selective Breeding) b. Recombinant DNA c. Applications of Genetic Engineering d. Ethics and Impacts of Biotechnology</p>	<p>SB2. Obtain, evaluate, and communicate information to analyze how genetic information is expressed in cells. b. Construct an argument based on evidence to support the claim that inheritable genetic variations may result from:</p> <ul style="list-style-type: none"> • new genetic combinations through meiosis (crossing over, nondisjunction); • non-lethal errors occurring during replication (insertions, deletions, substitutions); and/or • heritable mutations caused by environmental factors (radiation, chemicals, and viruses). <p>SB2. Obtain, evaluate, and communicate information to analyze how genetic information is expressed in cells. c. Ask questions to gather and communicate information about the use and ethical considerations of biotechnology in forensics, medicine, and agriculture. (Clarification statement: The element is intended to include advancements in technology relating to economics and society such as advancements may include Genetically Modified Organisms.)</p>
Heredity Review Packet	Thanksgiving Break 11/23 - 12/1		<p><i>-Cells Review</i> <i>-DNA, RNA, & Protein Synthesis Review</i> <i>-Mutations Review</i> <i>-Mendel's Laws Review</i> <i>-Punnett Squares Review</i> <i>to be completed during Thanksgiving Break</i></p>	
2 Cellular Genetics & Heredity Part 2 Heredity (23% of EOC)	11/25 - 12/13	Chapter 11 Chapter 11 Chapter 11	<p>2.4 Mendel's Laws a. The Work of Gregor Mendel b. Applying Mendel's Principles c. Non-Mendelian Genetics</p> <p>2.5 Other Patterns of Inheritance a. Sex-linked Inheritance b. Pedigrees</p> <p>2.6 Sexual vs. Asexual Reproduction</p>	<p>SB3. Obtain, evaluate, and communicate information to analyze how biological traits are passed on to successive generations. a. Use Mendel's laws (segregation and independent assortment) to ask questions and define problems that explain the role of meiosis in reproductive variability. b. Use mathematical models to predict and explain patterns of inheritance. (Clarification statement: Students should be able to use Punnett squares (monohybrid and dihybrid crosses) and/or rules of probability, to analyze the following inheritance patterns: dominance, codominance, incomplete dominance.)</p>

			<p>a. Binary fission vs. Mitosis b. Meiosis c. Mitosis vs. Meiosis</p>	<p>SB3. Obtain, evaluate, and communicate information to analyze how biological traits are passed on to successive generations. b. Use mathematical models to predict and explain patterns of inheritance. (Clarification statement: Students should be able to use Punnett squares (monohybrid and dihybrid crosses) and/or rules of probability, to analyze the following inheritance patterns: dominance, codominance, incomplete dominance.) SB3. Obtain, evaluate, and communicate information to analyze how biological traits are passed on to successive generations. c. Construct an argument to support a claim about the relative advantages and disadvantages of sexual and asexual reproduction.</p>
<p>1st Semester Review & Midterm Assessment</p>	<p>12/16 - 12/19</p>		<p>Unit 1 & Unit 2 midterm assessment review and assessment</p>	
<p>Evolution & Ecology Review Packet</p>	<p>12/20 - 1/5</p>		<p><i>Ecology Review Packet to be completed during Christmas break</i></p>	