Northampton Area School District
Year at a Glance

NORTHAMPTON AREA SCHOOL DISTRICT
Learn, Listen, and Lead

Honors and CP BIOLOGY

Board Approval Date: 08/22/2016

Common Units of Study with Sample Lesson Topics	Textbook Chapter(s)	Estimated % of Course Time	Estimated Time	Big Idea (s)	PA Academic Standard(s)
Quarter 1: The Nature of Life and Cells ❖ The Science of Biology 1. Course Intro 2. Studying Life ❖ The Chemistry of Life 1. Properties of Water 2. Carbon Compounds 3. Macromolecules to Monomers 4. Structure and Function of Macromolecules 5. Chemical Reactions and Enzymes ❖ Cell Structure and Function 1. Life is Cellular 2. Cell Structure and Plasma Membrane 3. Cell Transport 4. Homeostasis and Cells 5. Organization of the Human Body ❖ Quarterly Exam Preparation and Assessment	1, 2, 7	20-25%	35-40 days	❖ Organisms share common characteristics of life. ❖ Life emerges due to the chemical organization of matter into cells. ❖ Cells have organized structures and systems necessary to support chemical reactions needed to maintain the living condition. ❖ Structure is related to function at all biological levels of organization.	❖ Bio.B.3.3 ❖ Bio.B.3.3.1 ❖ Bio.A.1.1 ❖ 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 ❖ Bio.A.1.1.1 Bio.A.1.2.1 Bio.A.1.2.2 Bio.A.4.1.1 Bio.A.4.1.2 Bio.A.4.1.3 Bio.A.4.2.1
Quarter 2: Cells and Genetics ❖ Photosynthesis 1. Energy and Life 2. Photosynthesis 3. Plant Anatomy, Homeostasis and Gas Exchange 4. Leaves ❖ Cellular Respiration and Fermentation 1. Cellular Respiration 2. Fermentation ❖ Cell Growth and Division 1. Cell Growth, Division, and Reproduction 2. Process of Cell Division 3. Regulating the Cell Cycle 4. Cancer/Cell Differentiation 5. Meiosis	8-11	20-25%	35-40 days	❖ Organisms obtain and use energy to carry out their life processes. ❖ New cells arise from the division of pre-existing cells. ❖ Eukaryotic cells can differentiate and organize making it possible for multicellularity.	❖ Bio.B.3.3 ❖ Bio.B.3.3.1 ❖ Bio.A.3.2.1 Bio.A.3.2.2 Bio.A.3.1 Bio.A.3.1.1 Bio.A.4.2.1 ❖ Bio.A.3.1.1 Bio.A.3.2.1 Bio.A.3.2.2 ❖ Bio.B.1.1.1 Bio.B.1.1.2 Bio.B.2.1.2 ❖ Bio.B.2.1.1 Bio.B.1.2.2

❖ Introduction to Genetics 1. The Work of Gregor Mendel 2. Applying Mendel's Principles 3. Other Patterns of Inheritance ❖ Quarterly Exam Preparation and Assessment					
Quarter 3: Genetics and Evolution ❖ DNA 1. The Structure of DNA 2. DNA Replication ❖ RNA and Protein Synthesis 1. RNA 2. Ribosomes and Protein Synthesis 3. Mutations ❖ Human Heredity 1. Human Chromosomes 2. Human Genetic Disorders ❖ Genetic Engineering 1. Selective Breeding 2. Recombinant DNA 3. Applications of Genetic Engineering ❖ Darwin's Theory of Evolution 1. Darwin Presents His Case 2. Evidence of Evolution ❖ Evolution of Populations 1. Genes and Variation 2. Evolution and Genetic Change in Populations 3. Process of Speciation ❖ Quarterly Exam Preparation and Assessment	12-17	20-25%	35-40 days	❖ DNA segments contain information for the production of proteins necessary for growth and function of cells. ❖ Hereditary information in genes is inherited and expressed. ❖ Evolution is the result of many random processes selecting for the survival and reproduction of a population.	❖ Bio.B.3.3 ❖ Bio.B.3.3.1 ❖ Bio.B.1.2.1 Bio.B.1.2.2 ❖ Bio.B.2.2.1 Bio.B.2.2.2 Bio.B.2.3.1 ❖ Bio.B.1.2.2 Bio.B.2.1.1 Bio.B.2.1.2 ❖ Bio.B.2.4.1 ❖ Bio.B.3.2.1 ❖ Bio.B.3.1.1 Bio.B.3.1.2 Bio.B.3.1.3
Quarter 4: Ecology ❖ The Biosphere 1. What is Ecology 2. Energy, Producers, and Consumers 3. Energy Flow in Ecosystems 4. Cycles of Matter ❖ Ecosystems and Communities 1. Niches and Community Interactions 2. Succession 3. Biotic and Abiotic Factors of Terrestrial/Aquatic Ecosystems ❖ Populations 1. How Populations Grow 2. Limits to Growth	3-6	20-25%	35-40 days	❖ Through a variety of mechanisms, organisms seek to maintain a biological balance between their internal and external environments. ❖ Organisms on Earth interact and depend in a variety of ways on other living and non-living things in their environments.	❖ Bio.B.3.3 ❖ Bio.B.3.3.1 ❖ Bio.B.4.1.1 Bio.B.4.1.2 Bio.B.4.2.1 Bio.B.4.2.3 ❖ Bio.B.4.2.2 Bio.B.4.2.4 Bio.B.4.1.2 ❖ Bio.B.4.2.5 ❖ Bio.B.4.2.4

❖ Humans in the Biosphere 1. A Changing Landscape 2. Using Resources Wisely 3. Meeting Ecological Challenges 4. Biodiversity ❖ Quarterly Exam Preparation and Assessment					