

BIOLOGY UPDATED CURRICULUM MAP

Unit:	Basic Biological Principles – Common Characteristics of Life, Common Components of all Cells (Prokaryotic and Eukaryotic) Levels of Biological Organization				
Big Ideas:	All organisms on earth share common characteristics of life. Structure is related to function at all biological levels of organization.				
Unit Essential Questions:	How do we know if something is alive? How is structure related to function at all biological levels of organization? How do organisms maintain a biological balance between their internal and external environments?				
Concept & Pacing	New Emphasis (Pa Core Standard)	Key Vocabulary	Mini-Lessons/Activities	Instructional Materials	Assessments
<u>MP1</u> Common characteristics of life Prokaryotic and eukaryotic cells Structure and function Levels of biological organization Biodiversity	3.1.9-12 A,B, Structure and function 3.1.9-12 (Y)	<ul style="list-style-type: none"> ● prokaryotic cell ● eukaryotic cell ● adaptation, stimuli ● homeostasis, metabolism, DNA< proteins, unicellular, multicellular, evolve 	3.1.6.89-12 A Use evidence to support that living things are made of cells and how DNA holds the instructions for proteins and how life operates on proteins 3.1.6.9-12 B Use a model to illustrate hierarchy of interacting systems within multicelled life	<ul style="list-style-type: none"> - Canvas powerpoints - Textbook related study guide, reinforcements, interactive readers - progress learning, - Ck12 - pearson mastering biology (honors) - Animations - Videos: Bozeman, Beverly biology, amoeba sisters, khan academy, crash course biology - Class discussions - Daily bellringers 	<ul style="list-style-type: none"> - Daily Homework (ranging from practice sheets to application of knowledge to solve problems) - Quiz (Multiple Choice and Some Fill in the Blank) - Exam (teacher made, multiple choice, modified true and false, fill in the blank, short answer and essay all in one test) - Progress learning - Mastering biology (honors) - CDT beginning of year

BIOLOGY UPDATED CURRICULUM MAP

Unit:	–Organic Chemistry, Metabolism and the role of energy in living things.				
Big Ideas:	Cells have organized structures and systems necessary to support chemical reactions needed to maintain the living condition. Organisms obtain and use energy to carry out their life processes. Life emerges due to the chemical organization of matter into cells.				
Unit Essential Questions:	How can understanding the function of organic compounds help you maintain a healthy life style? Why must living organisms, such as humans, maintain a stable level of ions such as salt and potassium within their bodies?				
Concept & Pacing	New Emphasis (Pa Core Standard)	Key Vocabulary	Mini-Lessons/Activities	Instructional Materials	Assessments
MP 1/2 Chemical Foundations for Cells Carbon Compounds in Cells: <ul style="list-style-type: none"> - Hydrolysis of polymers - Dehydration of monomers 	3.1.9-12E 3.1.9-12F 3.1.9-12G 3.1.9-12 H organization of matter and energy flow in organisms	<ul style="list-style-type: none"> ● Compound ● Ion ● Activation energy ● Enzyme ● Polar molecule ● Mixture ● Macromolecule ● Polymer ● Plasma Membrane Monomers, polymers, dehydration reaction, hydrolysis reaction, amino acids, proteins, nucleotides, nucleic acids, monosaccharides, carbohydrates, fatty acids, lipids	Class Discussion and notes Construct how C,H,O combine to form sugars, amino acids, nucleotides, fatty acids Model bonds being broken in cellular respiration and reforming bonds in ATP	<ul style="list-style-type: none"> - Canvas powerpoints - Textbook related study guide, reinforcements, interactive readers - progress learning, - Ck12 - pearson mastering biology (honors) - Animations - Videos: Bozeman, Beverly biology, amoeba sisters, khan academy, crash course biology - Class discussions - Daily bellringers 	<ul style="list-style-type: none"> - Daily Homework (ranging from practice sheets to application of knowledge to solve problems) - Quiz (Multiple Choice and Some Fill in the Blank) - - Exam (teacher made, multiple choice, modified true and false, fill in the blank, short answer and essay all in one test) - Progress learning - Mastering biology (honors)

BIOLOGY UPDATED CURRICULUM MAP

Unit:	Cell anatomy & physiology, Movement across the cell membrane				
Big Ideas:	Discuss how all of the organelles within the cell interact to maintain homeostasis of the cell				
Unit Essential Questions:	How are the organelles within a cell interdependent				
Concept & Pacing	New Emphasis (Pa Core Standard)	Key Vocabulary	Mini-Lessons/Activities	Instructional Materials	Assessments
Mp 2 How parts of a cell work together for entire cell to function and maintain homeostasis Movement across the cell membrane	3.1.9-12 B and C	Organelles,nucleus,ER,golgi, Vesicles, chloroplast, mitochondria, ribosomes, Cell wall, cell membrane, Passive and active transport Osmosis, diffusion, exocytosis, endocytosis, cell membrane	Investigate evidence that positive and negative feedback mechanisms maintain homeostasis Model the function of the cell as a whole and the ways that parts of cells contribute to function Osmosis Diffusion Lab	<ul style="list-style-type: none"> - Canvas powerpoints - Textbook related study guide,reinforcements, interactive readers - progress learning, - Ck12 -pearson mastering biology (honors) - Animations - Videos: Bozeman, Beverly biology, amoeba sisters, khan academy, crash course biology - Class discussions - Daily bellringers 	<ul style="list-style-type: none"> - Daily Homework (ranging from practice sheets to application of knowledge to solve problems) - Quiz (Multiple Choice and Some Fill in the Blank) - Exam (teacher made, multiple choice, modified true and false, fill in the blank, short answer and essay all in one test) - Progress learning - Mastering biology (honors) - Lab on diffusion, osmosis and active transport

BIOLOGY UPDATED CURRICULUM MAP

Unit:	– Photosynthesis, Cellular Respiration, Metabolism and the role of energy in living things.				
Big Ideas:	How do different organisms obtain and use energy to survive in their environment? New cells arise from the division of pre-existing cells.				
Unit Essential Questions:	How does exercising daily help you stay fit? Why are organism from generation to generation different than their ancestors?				
Concept & Pacing	New Emphasis (Pa Core Standard)	Key Vocabulary	Mini-Lessons/Activities	Instructional Materials	Assessments
MP 2 How Cells Acquire Energy How Cells Release Stored Energy: <ul style="list-style-type: none"> - Energy and Living things - Photosynthesis - Cellular Respiration - fermentation 	3.1.9-12 J, K	<ul style="list-style-type: none"> ● ATP ● Cellular Respiration ● Metabolism ● Photosynthesis ● Pigment ● Fermentation 	<ul style="list-style-type: none"> - Class Discussion and notes - Use model to illustrate how photosynthesis transforms light energy into stored chemical energy - -Construct how C,H,O combine to form sugars, amino acids, nucleotides, fatty acids - -model bonds being broken in cellular respiration and reforming bonds in ATP - -contrast flow of energy and cycling of matter in both aerobic and anaerobic conditions 	<ul style="list-style-type: none"> - Canvas powerpoints - Textbook related study guide, reinforcements, interactive readers - progress learning, - Ck12 - pearson mastering biology (honors) - Animations - Videos: Bozeman, Beverly biology, amoeba sisters, khan academy, crash course biology - Class discussions - Daily bellringers - 	<ul style="list-style-type: none"> - Daily Homework (ranging from practice sheets to application of knowledge to solve problems) - Quiz (Multiple Choice and Some Fill in the Blank) - - Exam (teacher made, multiple choice, modified true and false, fill in the blank, short answer and essay all in one test) - Progress learning - Mastering biology (honors)

BIOLOGY UPDATED CURRICULUM MAP

Unit:	Cell Division: Mitosis and Meiosis and mutations				
Big Ideas:	Cell division guarantees every cell is identical, meiosis guarantees variation, mutation is necessary for natural selection				
Unit Essential Questions:	Why must cells divide How do sex cells differ from somatic cells How do mutations lead to variation				
Concept & Pacing	New Emphasis (Pa Core Standard)	Key Vocabulary	Mini-Lessons/Activities	Instructional Materials	Assessments
MP 3 Growth and Development of Organisms	3.1.9-12D 3.1.9-12 Q	Mitosis,meiosis, cytokinesis, prophase, anaphase,metaphase, telophase, diploid, haploid, identical, variation, gene mutation, frameshift mutation, chromosomal mutation	Show the mathematical evidence through genetic combinations during meiosis Discuss errors during replication Use a model to illustrate mitosis in maintaining an organism	<ul style="list-style-type: none"> - Canvas powerpoints - Textbook related study guide,reinforcem ents, interactive readers - progress learning, - Ck12 -pearson mastering biology (honors) - Animations - Videos: Bozeman, Beverly biology, amoeba sisters, khan academy, crash course biology - Class discussions - Daily bellringers - 	<ul style="list-style-type: none"> - Daily Homework (ranging from practice sheets to application of knowledge to solve problems) - Quiz (Multiple Choice and Some Fill in the Blank) - - Exam (teacher made, multiple choice, modified true and false, fill in the blank, short answer and essay all in one test) - Progress learning - Mastering biology (honors) - Lab identifying onion cells in various stages of the cell cycle

BIOLOGY UPDATED CURRICULUM MAP

Unit:	Structure and function of DNA, Mendelian Genetics, Human Genetics				
Big Ideas:	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.				
Unit Essential Questions:	Why do organisms have different characteristics over a population? How can you explain the fact that organisms are so similar at the molecular level, yet so different in appearance?				
Concept & Pacing	New Emphasis (Pa Core Standard)	Key Vocabulary	Mini-Lessons/Activities	Instructional Materials	Assessments
Mp 3 - Inheritance of traits - Mendelian genetics - Non Mendelian genetics	3.1.9-12 P,Q,R	<ul style="list-style-type: none"> ● Dominant ● Recessive ● Crossing-over ● Phenotype ● Genotype ● Heterozygous ● Homozygous ● Pedigree ● Karyotype ● Autosome ● Genetic disorder ● Codominance ● Incomplete dominance 	<ul style="list-style-type: none"> - Apply math to explain variation and distribution of traits in a population Discuss the relationship between DNA and chromosomes in coding for traits Punnett square practice: monohybrid ,dihybrid, incomplete dominance Dominance, codominance, epistasis, blood typing	<ul style="list-style-type: none"> - Canvas powerpoints - Textbook related study guide,reinforcem ents, interactive readers - progress learning, - Ck12 -pearson mastering biology (honors) - Animations - Videos: Bozeman, Beverly biology, amoeba sisters, khan academy, crash course biology - Class discussions - Daily bellringers - 	<ul style="list-style-type: none"> - Daily Homework (ranging from practice sheets to application of knowledge to solve problems) - Quiz (Multiple Choice and Some Fill in the Blank) - - Exam (teacher made, multiple choice, modified true and false, fill in the blank, short answer and essay all in one test) - Progress learning - Mastering biology (honors) Lab working with pedigrees and Punnett squares

BIOLOGY UPDATED CURRICULUM MAP

Unit:	Replication, Transcription, Translation, mutations				
Big Ideas:	Discuss protein synthesis and why this is the central dogma to life				
Unit Essential Questions:	How do the instructions in DNA code for the instruction in the proteins, the workers of the cell				
Concept & Pacing	New Emphasis (Pa Core Standard)	Key Vocabulary	Mini-Lessons/Activities	Instructional Materials	Assessments
MP 4 Copying DNA Creating RNA Translating into proteins Chromosomal mutations DNA point mutations	3.1.9-12 P	DNA, RNA, codons, anticodons, replication, transcription, translation, genetic code, amino acids	Instructions for characteristic traits passed from parents to offspring 3.1.6-8M Use a model to describe why changes to genes may affect proteins and how that affects the organism	<ul style="list-style-type: none"> - Canvas powerpoints - Textbook related study guide, reinforcements, interactive readers - progress learning, - Ck12 - pearson mastering biology (honors) - Animations - Videos: Bozeman, Beverly biology, amoeba sisters, khan academy, crash course biology - Class discussions - Daily bellringers 	<ul style="list-style-type: none"> - Daily Homework (ranging from practice sheets to application of knowledge to solve problems) - Quiz (Multiple Choice and Some Fill in the Blank) - - Exam (teacher made, multiple choice, modified true and false, fill in the blank, short answer and essay all in one test) - Progress learning - Mastering biology (honors) - Lab working with mutations

BIOLOGY UPDATED CURRICULUM MAP

Unit:	Microevolution and Speciation				
Big Ideas:	How do populations change over time, how do new species form over time, evidence of evolution				
Unit Essential Questions:	Discuss the 4 processes that lead to better adapted populations				
Concept & Pacing	New Emphasis (Pa Core Standard)	Key Vocabulary	Mini-Lessons/Activities	Instructional Materials	Assessments
MP 4 Evidence of common ancestry and diversity Natural Selection Adaptations Gene flow Genetic Drift Isolating Mechanisms	3.1.9-12 S 3.1.9-12 T and U, O 3.1.9-12 W and X	Natural selection, adaptation, gene flow, genetic drift, founder effect, mutations, reproductive isolation, species, extinction, isolating mechanisms, fitness, 4 evidences of evolution	Model how natural selection leads to adaptation of populations Evaluate evidence that supports increasing populations, emergence of new species, extinction Evaluate evidence of behavior on survival of the fittest	<ul style="list-style-type: none"> - Canvas powerpoints - Textbook related study guide, reinforcement, interactive readers - progress learning, - Ck12 - pearson mastering biology (honors) - Animations - Videos: Bozeman, Beverly biology, amoeba sisters, khan academy, crash course biology - Class discussions - Daily bellringers 	<ul style="list-style-type: none"> - Daily Homework (ranging from practice sheets to application of knowledge to solve problems) - Quiz (Multiple Choice and Some Fill in the Blank) - - Exam (teacher made, multiple choice, modified true and false, fill in the blank, short answer and essay all in one test) - Progress learning - Mastering biology (honors)

BIOLOGY UPDATED CURRICULUM MAP

Unit:	Ecology				
Big Ideas:	The interaction between biotic and abiotic factors in an ecosystem, the flow of energy within an ecosystem				
Unit Essential Questions:					
Concept & Pacing	New Emphasis (Pa Core Standard)	Key Vocabulary	Mini-Lessons/Activities	Instructional Materials	Assessments
MP 4 Ecosystem dynamics, functioning, resilience Social interactions and group behaviors Interdependent relationships in ecosystems	3.1.9-12 I, M, N, O,L	Predation, commensalism, mutualism, mimicry, parasitism, Food chain, food web, food pyramid, carbon, nitrogen, water cycles, various ecosystems characteristics, biotic, abiotic, carrying capacity	Use models to discuss carrying capacity Provide evidence how stable environments maintains consistent numbers and unstable may result in new ecosystem Design a solution to reduce human impact on the ecosystems	<ul style="list-style-type: none"> - Canvas powerpoints - Textbook related study guide, reinforcements, interactive readers - progress learning, Ck12 - pearson mastering biology (honors) - Animations - Videos: Bozeman, Beverly biology, amoeba sisters, khan academy, crash course biology - Class discussions - Daily bellringers 	<ul style="list-style-type: none"> - CDT end of year keystone test - Daily Homework (ranging from practice sheets to application of knowledge to solve problems) - Quiz (Multiple Choice and Some Fill in the Blank) - Exam (teacher made, multiple choice, modified true and false, fill in the blank, short answer and essay all in one test) - Progress learning - Mastering biology (honors)