

Map: **Living Environment** Grade Level: **10**District: **Island Trees**Created: **05/07/2007** Last Updated: **05/07/2007**

	Essential Questions	Content	Skills	Standards/PIs
Unit 1	<p>How do you distinguish between living and nonliving things?</p> <p>How do the life functions help maintain homeostasis?</p> <p>How is each of the life functions related to each other?</p> <p>Why is the cell the basic unit of life?</p> <p>How do plant and animal cells differ? How are they similar?</p> <p>Why do plant and</p>	<p><u>Topic 1: Life Functions</u></p> <p>Vocabulary:</p> <p>Respiration</p> <p>Transport/Circulation</p> <p>Nutrition/Digestion</p> <p>Excretion</p> <p>Synthesis</p> <p>Growth</p> <p>Metabolism</p> <p>Homeostasis</p> <p>Reproduction</p> <p>Dynamic Equilibrium</p> <p>Regulation</p> <p><u>Topic 2: Cells</u></p> <p><u>History of the Cell</u></p> <p>Vocabulary:</p> <p>Robert Hooke</p> <p>Antion Von Leeuwenhoek</p> <p>Schleiden</p> <p>Schwann</p> <p>Virchow</p> <p><u>Cell Theory/Exceptions</u></p>	<p>Identify the necessary life functions</p> <p>Distinguish relationships between each of the life functions</p> <p>Recognize and label the parts of a cell</p> <p>Describe the function of each cell organelle.</p> <p>Summarize how cell organelles work together to maintain homeostasis</p>	<p>MST1-K4-2A</p> <p>MST4-K6-6B</p> <p>MST4-K6-6C</p> <p>MST4-K10-10C</p>

<p>animal cells need to be different?</p>	<p><u>Levels of Organization</u></p>				
<p>How do cell organelles rely on each other to function?</p>	<p>Vocabulary:</p>	<p>organelle</p>			
<p>How do the different organelles work together to maintain homeostasis?</p>	<p>cell</p>	<p>tissue</p>			
<p>How do the different organelles work together to maintain homeostasis?</p>	<p>organ</p>	<p>organ system</p>			
<p>How do the different organelles work together to maintain homeostasis?</p>	<p>organism</p>	<p><u>Parts of the Cell</u></p>			
<p>How do the different organelles work together to maintain homeostasis?</p>	<p>Vocabulary:</p>	<p>cell membrane</p>			
<p>How do the different organelles work together to maintain homeostasis?</p>	<p>receptor molecule</p>	<p>cytoplasm</p>			
<p>How do the different organelles work together to maintain homeostasis?</p>	<p>chloroplast</p>	<p>mitochondria</p>			
<p>How do the different organelles work together to maintain homeostasis?</p>	<p>nucleus</p>	<p>ribosome</p>	<p>Prepare a wet mount</p>		
<p>How do the different organelles work together to maintain homeostasis?</p>	<p>vacuole</p>	<p><u>Topic 3: Instrumentation</u></p>	<p>Know the parts of the microscope</p>		
<p>Why did it take us so long to learn that living things are made of cells?</p>	<p>compound light microscope</p>	<p>dissecting microscope</p>	<p>Predict the size of an organism viewed under the microscope</p>		
<p>Why did it take us so long to learn that living things are made of cells?</p>	<p>electron microscope</p>	<p>ultracentrifuge</p>	<p>Estimate how many of a particular organism would be seen under both low and high power</p>		
<p>How did advances in the microscope lead to a better</p>	<p>micro dissection tools</p>	<p>staining techniques</p>			

	<p>understanding of cell make-up?</p> <p>How does a cell membrane help to maintain homeostasis?</p> <p>Why does diffusion always lead to equilibrium?</p> <p>Why is water necessary for transport to occur?</p>	<p>Topic 4: Transport</p> <p>Vocabulary:</p> <p>active transport</p> <p>diffusion</p> <p>homeostasis</p> <p>dynamic equilibrium</p> <p>homeostasis</p> <p>concentration</p>	<p>Distinguish between passive and active transport</p> <p>Point out the importance of water to the life function of transport</p>		
Unit 2	<p>Why do scientists need to classify organisms?</p> <p>How can you tell which organisms are more closely related by their classification?</p> <p>How is classification related to evolutionary relationships?</p> <p>Why do large complex molecules need to be broken down?</p>	<p>Topic 5: Classification/Taxonomy</p> <p>Five Kingdom System: monera, protista, fungi, plants, animals</p> <p>Eukaryote vs. Prokaryote</p> <p>Further Classification Subdivisions- phylum, class, order, family, genus, species</p> <p>Binomial Nomenclature</p> <p>Species</p> <p>Dichotomous Keys</p> <p>Topic 6: Biochemistry</p> <p>Vocabulary:</p>	<p>State the importance of classifying organisms</p> <p>Explain how classification system relates to evolutionary relationships.</p> <p>Create a dichotomous key</p> <p>Differentiate between elements and compounds</p> <p>Recognize the structure of proteins, carbohydrates, and lipids.</p>	<p>MST1-K5-2A</p> <p>MST1-K6-2A</p> <p>MST4-K10-10A</p> <p>MST4-K11-11B</p>	

<p>Why are organic molecules so important to living organisms?</p>	<p>Inorganic/Organic</p>	
<p>How is hydrolysis related to digestion?</p>	<p>Organic Molecules-</p>	
<p>Why do organic reactions require enzymes?</p>	<p>carbohydrates/simple sugars</p>	
<p>How are enzymes affected by temperature, pH, substrate/enzyme concentration?</p>	<p>amino acids/proteins</p>	
<p>Why is photosynthesis necessary for all living organisms to sustain life?</p>	<p>lipids/fatty acids/glycerol</p>	
<p>How are leaves well-adapted to perform photosynthesis?</p>	<p>Dehydration Synthesis/Hydrolysis</p>	<p>Lab: Mr. Enzyme to the Rescue</p>
	<p><u>Topic 7: Enzymes</u></p>	<p>Lab: Liver Catalase Lab</p>
	<p>Vocabulary:</p>	<p>Lab: pH Testing</p>
	<p>enzyme/catalyst</p>	<p>Unit Test: Biochemistry and Enzymes</p>
	<p>Lock and Key Model/Specificity</p>	
	<p>active site</p>	
	<p>substrate</p>	
	<p>pH scale</p>	
	<p>denaturation</p>	
	<p><u>Topic 8: Photosynthesis</u></p>	<p>Lab: Structure of a Leaf</p>
	<p>Photosynthetic Equation</p>	<p>Lab: Stomates (using lettuce)</p>
	<p>Vocabulary: raw materials/end products</p>	<p>Lab: Pigment Lab (paper chromatography of spinach leaf extract)</p>
	<p>Chloroplasts/Chlorophyll</p>	<p>Photosynthesis Test</p>
	<p>Conditions affecting rate of photosynthesis</p>	
	<p>Vocabulary: light intensity, water/carbon dioxide, temperature</p>	
	<p>Leaf Structure</p>	
	<p>Vocabulary: epidermis, cuticle, palisade layer, spongy layer, vascular</p>	

		tissue, stomates/guard cells				
Unit 3	<p>Why is food necessary for all the life functions to occur?</p> <p>Why is the sun considered the ultimate source of energy for all living things?</p> <p>Why is aerobic respiration more efficient than anaerobic respiration?</p> <p>How is each part of the digestive system adapted to performing its function?</p> <p>How do egestion and excretion differ?</p> <p>Why must food be digested to be usable?</p> <p>Why do humans need a circulatory system?</p> <p>Why is blood considered a tissue?</p>	<p>Topic 9: Cellular Respiration</p> <p>Vocabulary:</p> <p>Chemical energy in food changed to a usable form (ATP)</p> <p>Equation for Aerobic Respiration</p> <p>Equation for Anaerobic Respiration (fermentation)</p> <p>Site of Respiration- cytoplasm/mitochondria</p> <p>Efficiency of Aerobic vs. Anaerobic</p> <p>Muscle Fatigue</p> <p>Topic 10: Human Nutrition</p> <p>Vocabulary:</p> <p>Nutrients</p> <p>carbohydrates, lipids, proteins</p> <p>water, minerals, vitamins</p> <p>Digestive System</p> <p>oral cavity, esophagus, stomach,</p> <p>small intestine, large intestine,</p> <p>peristalsis</p>	<p>Summarize aerobic and anaerobic resp. reactions.</p> <p>Compare and contrast aerobic and anaerobic respiration</p> <p>Trace the path a piece of food would follow after eaten</p> <p>Match each organ with its function</p> <p>List the endproducts of digestion</p> <p>Describe some disorders of the digestive system.</p>		<p>MST1-K6-2A</p> <p>MST4-K6-6B</p> <p>MST4-K6-6C</p> <p>MST4-K10-10A</p> <p>MST4-K10-10B</p> <p>MST4-K10-10C</p>	

<p>Why does the heart need to be a muscle?</p>	<p>villi</p>				
<p>Why is it important to know your blood type?</p>	<p>Function of Organs</p> <p>hydrolytic enzymes (digestive juices)</p>				
<p>How does blood pressure affect how the heart can pump?</p>	<p>Accessory Organs</p> <p>pancreas, liver, gall bladder, salivary glands</p>				
<p>How do the lungs and the heart interact in the exchange of gases?</p>	<p>Purpose of Digestion</p> <p>large insoluble --> small soluble</p> <p>absorption of nutrients- end products of digestion</p>	<p>Describe the function of each blood component</p>			
<p>Why is a good diet necessary to maintain a healthy heart?</p>	<p>ingestion, digestion, absorption, egestion</p>	<p>Discuss how pathogens trigger the immune system</p>			
<p>How do white blood cells help fight infection?</p>	<p>Malfunctions</p> <p>ulcers, constipation, diarrhea, gall stones, appendicitis</p>	<p>Relate AIDS to the disruption of the immune system</p>			
<p>How are active and passive immunity different?</p>	<p>Topic 11: Human Transport</p>	<p>Follow a drop of blood through the circulatory system.</p>			
<p>How has the use of vaccines helped combat pathogens?</p>	<p>Blood</p> <p>a. blood components</p> <p>b. blood typing</p>	<p>Trace the pathway of blood through the heart and lungs</p>			
	<p>Immunity</p>	<p>Compare the anatomy and function of the 3 types of blood vessels</p>			
	<p>Vocabulary:</p> <p>disease, antigen/antibodies, allergy</p>	<p>Evaluate how diet plays a role in cardiovascular disease</p>			
	<p>immune system -AIDS</p>				
	<p>microbe, parasite</p>				
	<p>pathogen, virus, bacteria</p>				
	<p>vaccine, white blood cells</p>				

		<p>passive and active immunity</p> <p>Heart</p> <p>Vocabulary:</p> <p>atrium - ventricle</p> <p>pulmonary artery and vein, aorta</p> <p>Blood vessels</p> <p>Vocabulary:</p> <p>artery - vein - capillary</p> <p>Lymphatic System</p> <p>Vocabulary:</p> <p>lymph vessels nodes, lymph, intercellular fluid</p> <p>Cardiovascular Diseases</p> <p>Vocabulary:</p> <p>Arteriosclerosis, Thrombosis, Embolism, Angina</p>				
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	Essential Questions	Content	Skills	Standards/PIs
Unit 4	How is the organization of the human respiratory system well adapted for its function?	<u>Topic 12: Human Respiration</u> Vocabulary: organization of respiratory system:	Follow the path of air through the respiratory system	MST1-K4-2A MST1-K6-2A MST4-K6-6B
	How does air pressure affect our ability to breathe?	nasal cavity,pharynx,trachea, bronchi,bronchioles,alveoli	Describe how oxygen and carbon dioxide are actually exchanged between the lung and the bloodstream	MST4-K10-10A MST4-K10-10B
	Why do gases go in the opposite direction at the cellular level, as compared to the lung?	Breathing -diaphragm, rib cage muscles, inhalation, exhalation use Bell Jar to simulate resp. system	State factors that affect breathing rate	MST4-K10-10B MST4-K12-12A
	Why is a moist respiratory surface essential for the transport of gases?	concentration of gases in the air control of breathing-medulla		
	Why must wastes be removed from the body?	lung disorders- bronchitis, asthma, emphysema, lung cancer	Skills associated with Making Connections Lab:	
	How does the kidney filter the blood and not remove necessary materials?	<u>Topic 13: Human Excretion</u> Vocabulary: Organs of Excretion :	* Identify the different parts of a controlled experiment	
	Why do mobile organisms have an advantage over those that are immobile?	lungs, liver, skin, urinary system kidney function- filtration (nephron)	*Design own experiment using the scientific method	
	Why are muscle cells different from all other types?	<u>Malfunctions</u> gout, skin cancer, kidney disease		
	How do the different parts of the skeletal/muscular system work together?	<u>Topic 14: Human Locomotion</u> Vocabulary: endoskeleton	Identify the organs of excretion in humans Label a	

		<p>bones-functions/structure</p> <p>cartilage</p> <p>muscles- smooth, cardiac, skeletal</p> <p>extensors/flexors</p> <p>connective tissue- tendons/ligaments</p> <p>joints- ball and socket, hinge, pivot, sliding, fixed</p> <p>Malfunctions:</p> <p>arthritis, tendonitis</p>	<p>diagram of the skin</p> <p>Label a diagram of the urinary system</p> <p>Explain how blood gets rid of wastes at the kidneys</p> <p>Explain the importance of locomotion to living things</p> <p>Identify the properties and functions of bone</p> <p>Explain the importance of cartilage</p> <p>Compare the 3 types of muscle</p>		
Unit 5	<p>Why is the nervous system necessary to maintain homeostasis?</p> <p>How is the organization of the nervous system conducive to its integrated functioning?</p>	<p><u>Topic 15: Nervous System</u></p> <p>Vocabulary:</p> <p>Regulation-maintaining homeostasis</p> <p>nerve control vs. chemical control</p> <p>stimuli, receptors, effectors, response</p> <p>neuron= functional unit</p>	<p>Label the parts of the neuron</p> <p>Describe the pathway of a reflex arc</p> <p>Compare and contrast the three different types of</p>		<p>MST1-K4-2A</p> <p>MST4-K6-6B</p> <p>MST4-K9-9A</p> <p>MST4-K10-10B</p> <p>MST4-K10-10C</p> <p>MST4-K12-</p>

	<p>Why do we need an endocrine system as well as a nervous system?</p> <p>Why is negative feedback such an excellent way to maintain homeostasis?</p> <p>How does the process of mitosis allow for the exact duplication of cells?</p> <p>What are the drawbacks to NO variation in a species?</p>	<p>dendrite, cell body, axon, myelin sheath,</p> <p>terminal branches, terminal knobs, neurotransmitters</p> <p>Neuron Types- sensory, inter, motor</p> <p>Impulse- electrochemical change</p> <p>Organization</p> <p>CNS- brain and spinal cord</p> <p>Brain-cerbrum, cerebellum, medulla</p> <p>Peripheral Nervous System- somatic and autonomic</p> <p>Reflex arch</p> <p>Malfunctions</p> <p>cerebral palsy, meningitis, stroke, polio</p> <p>Behavior</p> <p>reflex, instinct, habit, imprinting, conditioning</p> <p>Topic 16: Endocrine System</p> <p>Vocabulary:</p> <p>Endocrine=ductless glands, secrete hormones</p> <p>Hormone- chemical messenger</p> <p>Target Organ- receptor molecules</p> <p>Negative Feedback</p>	<p>neurons</p> <p>Match the different parts of the brain with their correct function</p> <p>Describe how the nervous system is involved in maintaining homeostasis</p> <p>Explain the causes and symptoms of various nervous system disorders</p> <p>Relate endocrine system to maintaining homeostasis</p> <p>Compare and contrasts nervous system and endocrine system</p> <p>Recognize how hormones get to their target cell</p> <p>Locate all of the endocrine glands in the body</p>	<p>12A</p>		
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<p>regulation of hormone secretion</p> <p>Endocrine Glands/Hormones Secreted</p> <p>pituitary (master gland), thyroid, parathyroid, adrenal, pancreas, testes/ovaries</p> <p>Hypersecretion/Hyopsecretion of a Hormone</p> <p>endocrine glands vs. exocrine glands</p>	<p>Create and explain negative feedback</p>
<p>Topic 17: Mitosis/ Asexual Reproduction</p> <p>Vocabulary:</p> <p>Function of Mitosis</p> <p>new cells, new organisms, growth</p> <p>Process of Mitosis</p> <p>exact duplication of genetic material</p> <p>phases- interphase, prophase, metaphase, anaphase, telophase</p> <p>NO VARIATION</p> <p>Cancer</p> <p>mitosis out of control</p> <p>Asexual Reproduction</p> <p>identical offspring by mitosis</p> <p>NO VARIATION</p> <p>Types of Asexual Reproduction</p> <p>binary fission, budding,</p>	<p>Explain the necessity for cellular reproduction</p> <p>Express why every cell needs genetic information</p> <p>Relate mitosis to asexual reproduction</p> <p>Describe how mitosis fits into the cell cycle</p> <p>Relate uncontrolled mitosis to cancer</p>

		sporulation, regeneration, vegetative propagation			
Unit 6	<p>Why is meiosis NECESSARY to make gametes?</p> <p>Why is the variation created by meiosis/fertilization important to the process of evolution?</p> <p>In an embryo, how do cells that were once all identical become the different parts of a multicellular organism?</p> <p>How are the male and female reproductive systems well adapted to perform their jobs?</p> <p>Why is the menstrual cycle a necessary cycle for continuation of the human species?</p>	<p>Topic 18: Meiosis/ Sexual Reproduction</p> <p>Vocabulary:</p> <p>Purpose of Meiosis halving the chromosome number to make gametes</p> <p>gametogenesis, homologous chromosomes, reduction division</p> <p>Stages of Meiosis meiosis 1/meiosis 2 synapsis, crossing over, tetrad formation</p> <p>Spermatogenesis</p> <p>Oogenesis</p> <p>Fertilization external vs. internal</p> <p>Embryonic Development zygote, cleavage, gastrulation, differentiation, endoderm, mesoderm, ectoderm</p> <p>Extra-embryonic Membranes amnion, yolk sac, allantois, chorion</p> <p>Topic 19: Human Reproduction and Development</p>	<p>Compare meiosis to the process of mitosis</p> <p>Relate meiosis to sexual reproduction</p> <p>Explain how meiosis is essential to diversity within species</p> <p>Discuss how meiosis and fertilization are related to maintenance of a species.</p> <p>Express how cells that are all identical can take on different jobs during development</p>	<p>MST1-K4-2B</p> <p>MST1-K4-2C</p> <p>MST1-K5-2A</p> <p>MST1-K5-2B</p> <p>MST1-K6-2E</p> <p>MST4-K6-6B</p> <p>MST4-K9-9A</p>	

		<p>Vocabulary:</p> <p>Male Reproductive Anatomy</p> <p>Female Reproductive Anatomy</p> <p>Menstrual cycle</p> <p>puberty, hormones, negative feedback</p> <p>stages of the menstrual cycle</p> <p>role of hormones</p> <p>Gestation</p> <p>Twins- fraternal/identical</p>	<p>Label the female and male reproductive anatomy</p> <p>Explain how various parts of reproductive anatomy are related to their job</p> <p>Summarize the role of hormones in the menstrual cycle and their overall function</p> <p>Design a negative feedback loop</p>			
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	Essential Questions	Content	Skills	Standards/PIs
Unit 7	<p>How are traits passed on from one generation to the next?</p> <p>Why is every human a unique individual, even if they come from the same parents?</p> <p>How is the structure of DNA conducive to making exact copies?</p> <p>How do cells with identical DNA differentiate to form a variety of cell types?</p> <p>How can genetic engineering be used to help cure/treat genetic disorders?</p> <p>How is DNA fingerprinting/gel electrophoresis useful in today's society?</p>	<p>Topic 20: Mendelian Genetics</p> <p>Mendel's work with pea plants</p> <p>Vocabulary: phenotype, genotype homozygous, heterozygous punnet square, probability test cross codominance, incomplete dominance sex linkage, sex determination, gene linkage crossing over genetic disorders: hemophilia, color-blindness, Tay-sachs, PKU</p> <p>Effect of the environment on heredity ex. Himilayan rabbit Detecting genetic disorders: karyotyping, amniocentesis, etc.</p> <p>Topic 21: Modern Genetics</p> <p>Vocabulary:</p>	<p>Explain how chromosomes, genes, and DNA are related</p> <p>Illustrate how offspring can show traits that their parents do not have.</p> <p>Point out the randomness of chromosome assortment that leads to variation among a species</p> <p>Relate fertilization to genetic recombination and biodiversity</p> <p>Solve genetic problems using punnet squares</p> <p>Recognize the components of a DNA molecule.</p> <p>Relate the structure of DNA to its ability to replicate</p> <p>Understand what DNA codes for and its importance.</p>	<p>MST4-K7-7A</p> <p>MST4-K7-7B</p> <p>MST1-K4-2A</p> <p>MST1-K4-2C</p> <p>MST1-K5-2B</p> <p>MST1-K6-2A</p> <p>MST4-K9-9A</p> <p>MST4-K11-11B</p>

	<p>History Leading up to the Discovery of DNA as Genetic Material:</p> <p>Watson and Crick</p>	<p>Formulate how DNA can be used to determine evolutionary relationships.</p>
	<p>Structure of a DNA molecule:</p> <p>template</p> <p>nucleotide</p> <p>nitrogenous base</p> <p>subunit</p> <p>replication of DNA</p> <p>Protein synthesis- expression of genes- mRNA, tRNA, proteins</p> <p>mutations</p>	<p>Relate genetic mutations to diseases and malfunctions of organism</p>
	<p>Topic 22: Genetic Engineering</p> <p>Vocabulary:</p> <p>Modern DNA Technology:</p> <p>cloning</p> <p>genetic engineering</p> <p>recombinant DNA</p> <p>gene therapy</p>	<p>Identify the purpose behind genetic engineering.</p> <p>Understand why cloning makes identical copies</p> <p>Describe the process of recombinant DNA and identify the purposes for which it is used.</p> <p>Describe the process of gene therapy.</p> <p>Understand ethical issues associated with genetic engineering.</p> <p>Understand the process of gel electrophoresis.</p> <p>Relate gel electrophoresis process to its</p>

		DNA fingerprinting/gel electrophoresis	uses (ex. crime investigation)		
Unit 8	<p>How do we know evolution has occurred?</p> <p>Why is evolution a necessary process for survival of a species?</p> <p>How can we tell how closely related two organisms are?</p> <p>How do we think the first organism came to be?</p>	<p>Topic 23: Evolution</p> <p>Evidence for Evolution:</p> <p>Vocabulary:</p> <p>fossils</p> <p>relative dating</p> <p>absolute dating</p> <p>comparative biochemistry</p> <p>comparative anatomy</p> <p>comparative cytology</p> <p>comparative embryology</p> <p>Theories of Evolution:</p> <p>Lamarck vs. Darwin</p> <p>Vocabulary:</p> <p>acquired characteristics/use and disuse</p> <p>natural selection</p> <p>overproduction</p> <p>competition</p> <p>variation</p> <p>survival of the fittest</p>	<p>Recognize the different kinds of evidence for evolution</p> <p>Compare how evolutionary relationships are used in taxonomy</p> <p>Compare the theories of Lamarck and Darwin.</p> <p>Explain Darwin's theory of Natural Selection including Survival of the Fittest</p> <p>Show the importance of variations to natural selection</p> <p>Identify the sources of variations in organisms</p> <p>Explain the difference between Darwin's Theory and the Modern Theory of evolution.</p> <p>Recognize the role of</p>	<p>MST1-K4-2A</p> <p>MST1-K4-2C</p> <p>MST1-K4-2D</p> <p>MST1-K5-2A</p> <p>MST1-K6-2C</p> <p>MST4-K8-8A</p> <p>MST4-K11-11B</p> <p>MST4-K11-11C</p>	

		<p>Origins of Life</p> <p>Vocabulary:</p> <p>heterotroph hypothesis</p> <p>anaerobic heterotroph</p> <p>anaerobic autotroph</p> <p>aerobic organisms</p> <p>common ancestry</p>	<p>overproduction and competition to evolution.</p> <p>Understand how scientists believe life began on earth</p>		
Unit 9	<p>How do plants and animals depend on each other and their physical environment?</p> <p>How is competition related to evolution?</p> <p>Why do energy and biomass decrease when we go up a food chain?</p> <p>Why are predator/prey relationships cyclical?</p> <p>Why is growth of populations limited by certain factors?</p> <p>Why is preserving diversity of species and habitats important to ecosystems?</p> <p>Why are material cycles important to ecosystems?</p>	<p><u>Topic 24: Ecology</u></p> <p><u>Intro to Ecology</u></p> <p>Vocabulary:</p> <p>environment</p> <p>abiotic/biotic</p> <p>carrying capacity</p> <p>competition</p> <p>limiting factors</p> <p>ecological niche</p> <p>habitat</p> <p>Ecosystem/Levels of Organization</p> <p>Vocabulary:</p> <p>organism</p> <p>population</p> <p>community</p> <p>ecosystem</p>	<p>Reconstruct ecological levels of organization in order by complexity</p> <p>Describe how plants and animals depend on each other and their environment.</p> <p>Recognize the many factors that limit population growth.</p> <p>Design a food web.</p> <p>I identify food chains within a food web</p> <p>Recognize a predator/prey cycle and relate to equilibrium</p>	<p>MST1-K4-2A</p> <p>MST1-K6-2A</p> <p>MST4-K6-6A</p> <p>MST4-K11-11A</p> <p>MST4-K11-11B</p> <p>MST4-K11-11C</p> <p>MST4-K12-12A</p> <p>MST4-K12-12B</p> <p>MST4-K12-12C</p>	

	<p>How have humans negatively impacted our environment?</p> <p>Why must the pros and cons be considered when developing new technology?</p>	<p>biosphere</p> <p>Nutritional Relationships</p> <p>Vocabulary:</p> <p>autotroph/producer</p> <p>carnivore-herbivore-omnivore</p> <p>consumer-primary-secondary-tertiary</p> <p>decomposer-saprophyte</p> <p>scavenger</p> <p>prey/predator</p> <p>heterotroph</p> <p>food chain-food web</p> <p>energy flow - energy pyramid</p> <p>Symbiotic Relationships</p> <p>Vocabulary:</p> <p>commensalism</p> <p>parasite/host</p> <p>mutualism</p> <p>Cycles</p> <p>Vocabulary:</p> <p>water cycle</p> <p>CHO cycle</p> <p>nitrogen cycle</p> <p>Ecological Succession</p> <p>Vocabulary</p> <p>pioneer organisms</p>	<p>Identify symbiotic relationships and their importance.</p> <p>Relate cycling of materials to maintenance of ecosystems</p> <p>Illustrate the stages of an ecological succession</p> <p>Relate human</p>		
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	<p>climax community</p> <p>primary succession</p> <p>secondary succession</p> <p>Topic 25: Human Impact on Ecosystems</p> <p>Impact of Human Decisions and Activities on the Physical and Living Environment:</p> <p>Vocabulary:</p> <p>finite resources</p> <p>habitat destruction</p> <p>direct harvesting</p> <p>pollution (air and water)</p> <p>global warming</p> <p>ozone depletion</p> <p>technology/industrialization</p> <p>Reversing Negative Human Impact of the Environment:</p> <p>Vocabulary:</p> <p>reduce</p> <p>reuse</p> <p>recycle</p> <p>conservation laws</p>	<p>activities to effects on the environment.</p> <p>Debate the pros and cons of technology.</p> <p>Formulate ways to help the environment.</p>		
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	Essential Questions	Content	Skills		Standards/PIs	
Unit 10		Regents Review	Demonstrates knowledge of 4 State Mandated Labs Practices Free Response Questions			

Key to Standards used in this Map

MST1-K4-2A [6 occurrences] - MST Standard 1 - Key Idea 4 [Scientific Inquiry i] - Performance Indicator 2A - elaborate on basic scientific and personal explanations of natural phenomena, and develop extended visual models and mathematical formulations to represent their thinking. [Commencement]

MST1-K4-2B [1 occurrence] - MST Standard 1 - Key Idea 4 [Scientific Inquiry i] - Performance Indicator 2B - hone ideas through reasoning, library research, and discussion with others, including experts. [Commencement]

MST1-K4-2C [3 occurrences] - MST Standard 1 - Key Idea 4 [Scientific Inquiry i] - Performance Indicator 2C - work toward reconciling competing explanations; clarifying points of agreement and disagreement. [Commencement]

MST1-K4-2D [1 occurrence] - MST Standard 1 - Key Idea 4 [Scientific Inquiry i] - Performance Indicator 2D - coordinate explanations at different levels of scale, points of focus, and degrees of complexity and specificity and recognize the need for such alternative representations of the natural world. [Commencement]

MST1-K5-2A [3 occurrences] - MST Standard 1 - Key Idea 5 [Scientific Inquiry ii] - Performance Indicator 2A - devise ways of making observations to test proposed explanations. [Commencement]

MST1-K5-2B [2 occurrences] - MST Standard 1 - Key Idea 5 [Scientific Inquiry ii] - Performance Indicator 2B - refine their research ideas through library investigations, including electronic information retrieval and reviews of the literature, and through peer feedback obtained from review and discussion. [Commencement]

MST1-K6-2A [5 occurrences] - MST Standard 1 - Key Idea 6 [Scientific Inquiry iii] - Performance Indicator 2A - use various means of representing and organizing observations (e.g., diagrams, tables, charts, graphs, equations, matrices) and insightfully interpret the organized data. [Commencement]

MST1-K6-2C [1 occurrence] - MST Standard 1 - Key Idea 6 [Scientific Inquiry iii] - Performance Indicator 2C - assess correspondence between the predicted result contained in the hypothesis and the actual result and reach a conclusion as to whether or not the explanation on which the prediction was based is supported. [Commencement]

MST1-K6-2E [1 occurrence] - MST Standard 1 - Key Idea 6 [Scientific Inquiry iii] - Performance Indicator 2E - develop a written report for public scrutiny that describes their proposed explanation, including a literature review, the research they carried out, its result, and suggestions for further research. [Commencement]

MST4-K6-6A [1 occurrence] - MST Standard 4 - Key Idea 6 [The Living Environment i] - Performance Indicator 6A - explain how diversity of populations within ecosystems relates to the stability of ecosystems. [Commencement]

MST4-K6-6B [5 occurrences] - MST Standard 4 - Key Idea 6 [The Living Environment i] - Performance Indicator 6B - describe and explain the structures and functions of the human body at different organizational levels (e.g., systems, tissues, cells, organelles). [Commencement]

MST4-K6-6C [2 occurrences] - MST Standard 4 - Key Idea 6 [The Living Environment i] - Performance Indicator 6C - explain how a one-celled organism is able to function despite lacking the levels of organization present in more complex organisms. [Commencement]

MST4-K7-7A [1 occurrence] - MST Standard 4 - Key Idea 7 [The Living Environment ii] - Performance Indicator 7A - explain how the structure and replication of genetic material result in offspring that resemble their parents. [Commencement]

MST4-K7-7B [1 occurrence] - MST Standard 4 - Key Idea 7 [The Living Environment ii] - Performance Indicator 7B - explain how the technology of genetic engineering allows humans to alter the genetic makeup of organisms. [Commencement]

MST4-K8-8A [1 occurrence] - MST Standard 4 - Key Idea 8 [The Living Environment iii] - Performance Indicator 8A - explain the mechanisms and patterns of evolution. [Commencement]

MST4-K9-9A [3 occurrences] - MST Standard 4 - Key Idea 9 [The Living Environment iv] - Performance Indicator 9A - explain how organisms, including humans, reproduce their own kind. [Commencement]

MST4-K10-10A [3 occurrences] - MST Standard 4 - Key Idea 10 [The Living Environment v] - Performance Indicator 10A - explain the basic biochemical processes in living organisms and their importance in maintaining dynamic equilibrium. [Commencement]

MST4-K10-10B [4 occurrences] - MST Standard 4 - Key Idea 10 [The Living Environment v] - Performance Indicator 10B - explain disease as a failure of homeostasis. [Commencement]

MST4-K10-10C [3 occurrences] - MST Standard 4 - Key Idea 10 [The Living Environment v] - Performance Indicator 10C - relate processes at the system level to the cellular level in order to explain dynamic equilibrium in multicelled organisms. [Commencement]

MST4-K11-11A [1 occurrence] - MST Standard 4 - Key Idea 11 [The Living Environment vi] - Performance Indicator 11A - explain factors that limit growth of individuals and populations. [Commencement]

MST4-K11-11B [4 occurrences] - MST Standard 4 - Key Idea 11 [The Living Environment vi] - Performance Indicator 11B - explain the importance of preserving diversity of species and habitats. [Commencement]

MST4-K11-11C [2 occurrences] - MST Standard 4 - Key Idea 11 [The Living Environment vi] - Performance Indicator 11C - explain how the living and nonliving environments change over time and respond to disturbances. [Commencement]

MST4-K12-12A [3 occurrences] - MST Standard 4 - Key Idea 12 [The Living Environment vii] - Performance Indicator 12A - describe the range of interrelationships of humans with the living and nonliving environment. [Commencement]

MST4-K12-12B [1 occurrence] - MST Standard 4 - Key Idea 12 [The Living Environment vii] - Performance Indicator 12B - explain the impact of technological development and growth in the human population on the living and nonliving environment. [Commencement]

MST4-K12-12C [1 occurrence] - MST Standard 4 - Key Idea 12 [The Living Environment vii] - Performance Indicator 12C - explain how individual choices and societal actions can contribute to improving the environment. [Commencement]