

LIVING ENVIRONMENT CURRICULUM MAP

Prior to the lessons listed students will be introduced to basic scientific investigations using scientific method and use of basic laboratory equipment.

UNIT TITLE & ESSENTIAL QUESTION	UNIT TIMELINE	UNIT CONTENT & SKILLS	CORE TEXTS & MATERIALS	FORMATIVE & SUMMATIVE ASSESSMENTS	CSRE ALIGNMENT	NEXT GENERATION/ CORE CONTENT STANDARDS
<p>Life Origins & Characteristics of Life</p> <p>EQ: Can life be sustained on another Planet such as Mars?</p>	<p>UNIT 1 15-20 days</p>	<p>SKILL 1: Analyze visual representations of scientific concepts and processes.</p> <p>SKILL 2: Scientific Experiments and Investigations: Analyze research studies that test scientific principles</p> <p>SKILL 3: Determine the central ideas or conclusion of a text: Trace the text’s explanation or depiction of a complex process, phenomenon or concept: Provide an accurate summary of the text.</p>	<p>Traveling to Mars- Article How Extremophiles Work- Article Meet LUCA, the ancestor of all living things- Article Origins of life- Notes (Google Slides) From one cell to multicell- Article Characteristics of life- Notes (Google Slides) Characteristics of life - Article Prokaryotic and Eukaryotic Cells - Article Cell Theory- Article How long to get to Mars - Article Endosymbiotic Theory - Article Cell City- Project</p>	<ul style="list-style-type: none"> ● Pre test using SMART feedback ● Extremophiles reading and annotations SMART feedback ● Extremophile comprehension check ● Meet LUCA reading and annotations SMART feedback ● LAB 1: Plant and Animal Cell Lab ● Multicellularity reading and annotation SMART feedback ● EXAM 1 ● Cell Theory reading and annotations SMART feedback ● LAB 2: Cell Gizmo ● Cell City Project ● Exam 2 ● Culminating Task ● Warm up, exit tickets, on the fly assessments, pre/post exams. 	<p>http://www.nysed.gov/common/nysed/files/programs/crs/culturally-responsive-sustaining-education-framework-ork.pdf</p>	<p>1., MS-LS1-1. Plan and conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.</p> <p>2., MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.</p> <p>3., HS-LS4-1. Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.</p>
<p>Biochemistry of Living Things</p> <p>EQ: What kinds of food do humans need to consume in order to have a healthy diet?</p>	<p>UNIT 2 22-28 days</p>	<p>SKILL 1: Analyze visual representations of scientific concepts and processes.</p> <p>SKILL 2: Scientific Experiments and Investigations:</p>	<p>NYT Article- No work no food-pandemic deepens global hunger</p> <p>The Other Way Covid Will Kill: Hunger</p>	<ul style="list-style-type: none"> ● Pre test using SMART feedback ● Hexagon strategy – introduction ● Photosynthesis Lab Gizmo ● Photosynthesis Lab – Modeling 		<p>HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within</p>

		<p>Analyze research studies that test scientific principles</p> <p>SKILL 3: Determine the central ideas or conclusion of a text: Trace the text’s explanation or depiction of a complex process, phenomenon or concept: Provide an accurate summary of the text.</p> <p>SKILL 4: Write a claim and support that claim with scientific evidence from texts, data tables, diagrams, and individual experiments.</p>	<p>CK-12: Photosynthesis</p> <p>NewsELA- Forest fires burning in the Amazon raise concerns about climate change</p> <p>Science Daily: Feeding the world without further deforestation is possible</p> <p>Cellular Respiration in Yeast</p> <p>How Science Works newela: Don't cut food stamps, doctors tell Congress</p>	<ul style="list-style-type: none"> ● SMART rubric Essay- Global food consumption & climate change ● Cellular respiration Lab ● Chemical Indicators ● Enzyme Lab- STEM Case ● NYS LAB 1- Diffusion through a membrane PRT 1 ● Final Exam 		<p>multicellular organisms.</p> <p>HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.</p> <p>HS-LS1-7: Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed, resulting in a net transfer of energy.</p> <p>HS-LS2-2: Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.</p> <p>HS-LS2-7: Design, evaluate, and refine a solution for reducing the impacts of human activities on the</p>
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						environment and biodiversity.
<p>Homeostasis in the Human Body</p> <p>EQ: How do living things respond to internal and external changes in its environment?</p>	<p>UNIT 3 20-25 days</p>	<p>SKILL 1: Analyze visual representations of scientific concepts and processes.</p> <p>SKILL 2: Scientific Experiments and Investigations: Analyze research studies that test scientific principles</p> <p>SKILL 3: Determine the central ideas or conclusion of a text: Trace the text’s explanation or depiction of a complex process, phenomenon or concept: Provide an accurate summary of the text.</p> <p>SKILL 4: Write a claim and support that claim with scientific evidence from texts, data tables, diagrams, and individual experiments.</p>	<p>Homeostasis-Reading</p> <p>Diabetes Article</p> <p>Oxygen transport, CO2 Removal Video</p> <p>Oxygen Transport</p> <p>Gas Exchange Article</p> <p>Respiratory PPT</p> <p>Diffusion and Osmosis</p> <p>CK-12 Reading Osmosis</p> <p>Contractile Vacuoles and Guard Cells</p> <p>Enzyme Article</p>	<ul style="list-style-type: none"> ● Pre assessment ● Lab- Homeostasis Gizmo ● CER- Homeostasis ● CER- Blood Glucose Regulation ● Regents Questions ● On the fly assessment ● Process Flow diagram ● NYS LAB 1- PRT 2 ● NYS LAB 2- Making Connections ● Lab- Experimental parts and variables ● Lab- Enzymes ● Final Unit Assessment 		<p>HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.</p> <p>HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.</p>
<p>Disruptions of homeostasis, diseases, and epidemiology</p> <p>EQ: How can geospatial technology</p>	<p>UNIT 4 20-23 days</p>	<p>SKILL 1: Analyze visual representations of scientific concepts and processes.</p> <p>SKILL 2: Scientific Experiments and Investigations:</p>	<p>Spanish Flu -1918</p> <p>Innate Immunity</p> <p>Vaccines and Immunity</p>	<ul style="list-style-type: none"> ● Pretest ● Lab – Viral Transmission ● Lab- Disease Spread ● Lab- Antibiotic Resistance 		<p>HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions</p>

<p>influence our decisions to trust science?</p>		<p>Analyze research studies that test scientific principles</p> <p>SKILL 3: Determine the central ideas or conclusion of a text: Trace the text’s explanation or depiction of a complex process, phenomenon or concept: Provide an accurate summary of the text.</p> <p>SKILL 4: Write a claim and support that claim with scientific evidence from texts, data tables, diagrams, and individual experiments.</p>	<p>Reading: Why collect demographic data during a pandemic?</p> <p>Polio Article- Nat Geo</p> <p>Effectiveness of Masks- Article</p> <p>Immune Failures & HIV</p> <p>HIV</p> <p>Tuberculosis</p> <p>Ending Small Pox Article</p> <p>Antibiotic Resistance</p> <p>Antibiotic Resistance Article</p> <p>Cancer Video Log</p> <p>Article: Lawmaker proposes warning labels for sugary drinks in California</p> <p>Diabetes CDC Resource</p>	<ul style="list-style-type: none"> ● Graffiti Walk comparing and contrasting ● Tuberculosis KWLS Chart ● Read, generate, sort, and solve- HIV ● Reading/annotations using anchor charts ● Final unit exam 		<p>within multicellular organisms.</p> <p>HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.</p> <p>HS-LS4-1: Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.</p> <p>HS-LS4-5: Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.</p>
<p>Comparative Reproduction</p> <p>EQ: How can comparing reproductive structure and</p>	<p>Unit 5 15 days</p>	<p>SKILL 1: Analyze visual representations of scientific concepts and processes.</p> <p>SKILL 2: Scientific Experiments and</p>	<p>Asexual Reproduction Article</p> <p>Asexual Reproduction-Bacteria</p>	<ul style="list-style-type: none"> ● Pre test ● Lab- Brine shrimp hatching success ● Lab- Comparing Bird and Reptile Eggs ● Lab- Flower Dissection ● Lab- Mitosis 		<p>HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide</p>

<p>function provide us with evidence for the evolution of all life?</p>		<p>Investigations: Analyze research studies that test scientific principles</p> <p>SKILL 3: Determine the central ideas or conclusion of a text: Trace the text’s explanation or depiction of a complex process, phenomenon or concept: Provide an accurate summary of the text.</p> <p>SKILL 4: Write a claim and support that claim with scientific evidence from texts, data tables, diagrams, and individual experiments.</p>	<p>Internal and External Fertilization video</p> <p>Mitosis and Meiosis video</p> <p>TEDED- Reproductive system- How gonads go</p> <p>TEDED-Sex determination: More complicated than you thought - Aaron Reedy</p> <p>Human Reproduction and Childbirth Video</p> <p>The role of cell division</p> <p>Evolution Interactive</p> <p>Which Animals Can Have The Most Babies? [Infographic]</p> <p>Reproductive health policies</p> <p>Life Greatest Miracle Video</p> <p>CK-12 Teratogens</p> <p>CK-12 Menstrual Cycle</p>	<ul style="list-style-type: none"> ● Video on explaining mitosis and answer questions ● CER about Mitosis vs. Meiosis ● Sexual reproduction inquiry activity ● Flow chart construction ● Reproductive health policy module ● Create a labeled diagram showing the steps that must occur for a multiple birth to occur in a mammalian species (such as cats). Include information about gamete formation and fertilization ● Think, talk, open, exchange activity ● Regents Questions surrounding reproduction (asexual, sexual, mitosis and meiosis) and human reproduction (menstrual cycle, male and female reproductive systems, placenta and prenatal care) ● Final Exam 		<p>specific functions within multicellular organisms.</p> <p>HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.</p> <p>HS-LS4-1: Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.</p> <p>HS-LS4-5: Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.</p>
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<p>Genetics, Biotechnology, and Evolution</p> <p>EQ:</p> <p>What makes us all different?</p>	<p>Unit 6 19-24 days</p>	<p>SKILL 1: Analyze visual representations of scientific concepts and processes.</p> <p>SKILL 2: Scientific Experiments and Investigations: Analyze research studies that test scientific principles</p> <p>SKILL 3: Determine the central ideas or conclusion of a text: Trace the text's explanation or depiction of a complex process, phenomenon or concept: Provide an accurate summary of the text.</p> <p>SKILL 4: Write a claim and support that claim with scientific evidence from texts, data tables, diagrams, and individual experiments.</p>	<p>Video- Twin Teens: One Black, One White. Celebrate Their Differences</p> <p>Observable Human Characteristics Article</p> <p>Breast Cancer- Article</p> <p>CK-12 DNA</p> <p>CK-12 Article- DNA Structure and Replication</p> <p>Video- What is DNA and How Does it Work?</p> <p>Flocabulary- Genes and Heredity</p> <p>Study Stack</p> <p>WhatArticle" Nature vs. nurture: Study on twins shows athletic destiny not set at birth makes muscles grow?</p> <p>Gene Expression PHET</p> <p>CK-12-Proteins, CK-12 RNA, CK-12 Article Transcription</p>	<ul style="list-style-type: none"> ● Pre test ● Inventory of observable human traits ● Reading and annotations for breast cancer genes ● NYS LAB 3- Biodiversity and Relationships ● NYS Lab 4- Beaks of Finches ● Gel electrophoresis Lab ● DNA Structure Lab ● DNA Model Lab Gizmo ● Mutations Lab Gizmo ● Transcription Lab ● Breakfast proteins activity ● Epigenetics worksheet ● Exit tickets ● Final Exam 	<p>HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.</p> <p>HS-LS3-1: Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.</p> <p>HS-LS2-7: Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.</p> <p>HS-LS3-2: Make and defend a claim based on evidence that inheritable genetic variations may result from (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations</p>
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<p>Ecology</p> <p>EQ: How can we redesign NYC infrastructure to be</p>	<p>Unit 7 22-25 days</p>	<p>SKILL 1: Analyze visual representations of scientific concepts and processes.</p>	<p>Video- Beavers: Creators of habitats</p> <p>CK-12 Food chains</p> <p>CK-12 Energy Flow</p>	<ul style="list-style-type: none"> ● Pre test ● Lab - Abiotic and Biotic Factors Gizmo ● Lab- Kelp population ● Lan- Deer predation / starvation 		<p>HS-LS2-1: Use mathematical and/or computational representations to support explanations of factors that affect</p>

<p>inclusive of ecosystems?</p>		<p>SKILL 2: Scientific Experiments and Investigations: Analyze research studies that test scientific principles</p> <p>SKILL 3: Determine the central ideas or conclusion of a text: Trace the text’s explanation or depiction of a complex process, phenomenon or concept: Provide an accurate summary of the text.</p> <p>SKILL 4: Write a claim and support that claim with scientific evidence from texts, data tables, diagrams, and individual experiments.</p>	<p>CK-12 Trophic Levels Census Clock Article CK-12 Characteristics of Populations Hare & The Fox Graphs Article: Community Interaction Article CK-12 Biodiversity Wolves and Bunnies Biomes Interactive CK-12 Article: Ecological Succession Succession EdPuzzle Mount St. Hellens Ecological Video River Ecology - Invasive Species Lab</p>	<ul style="list-style-type: none"> ● Lab- River ecology ● Lab- Modeling population growth ● Symbiotic Relationships presentation ● 3D Diorama of NYC redesigned ● Final assessment 		<p>carrying capacity of ecosystems at different scales.</p> <p>HS-LS2-2: Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.</p> <p>HS-LS2-6: Evaluate claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.</p> <p>HS-LS2-7: Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity</p>
<p>Climate Change & Human Impact</p>	<p>Unit 8 14-18 days</p>	<p>SKILL 1: Analyze visual representations of scientific concepts and processes.</p>	<p>Google Earth</p>	<ul style="list-style-type: none"> ● Pre test ● Comparing biodiversity lab ● Greenhouse effect lab 		<p>HS-LS2-1: Use mathematical and/or computational representations to</p>

<p>EQ: How do we as a global community begin to restore Earth back to a natural balance?</p>		<p>SKILL 2: Scientific Experiments and Investigations: Analyze research studies that test scientific principles</p> <p>SKILL 3: Determine the central ideas or conclusion of a text: Trace the text’s explanation or depiction of a complex process, phenomenon or concept: Provide an accurate summary of the text.</p> <p>SKILL 4: Write a claim and support that claim with scientific evidence from texts, data tables, diagrams, and individual experiments.</p>	<p><u>Video- What have we done to planet Earth?</u></p> <p><u>Human Population Slides</u></p> <p><u>Population Growth Simulation</u></p> <p><u>Trade-offs</u></p> <p><u>Why is biodiversity so important?</u></p> <p><u>Natures Pharmacy PBS Video</u></p> <p><u>Gimkit Climate Change Review</u></p> <p><u>CK-12 Air Pollution Article</u></p> <p><u>CK-12 Ozone Depletion Article</u></p> <p><u>Global Temperature Anomalies Video</u></p> <p><u>Climate Time Machine - NASA</u></p> <p><u>Modeling Increases in Sea Level</u></p> <p><u>NRDC Article - Global climate change</u></p> <p><u>Earth's Carbon Cycle</u></p>	<ul style="list-style-type: none"> ● The air we breathe formative quiz ● Sea ice quiz ● Edpuzzle ● Carbon Cycle Gizmo Lab ● Acid precipitation lab ● Final Exam ● Letter to congress addressing climate change 	<p>support explanations of factors that affect carrying capacity of ecosystems at different scales.</p> <p>HS-LS2-2: Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.</p> <p>HS-LS2-6: Evaluate claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.</p> <p>HS-LS2-7: Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.</p> <p>HS-LS4-1: Communicate</p>
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						<p>scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.</p> <p>HS-LS4-2: Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.</p>
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