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
Life Origins & Characteristics of Life EQ: Can life be sustained on another Planet such as Mars?	UNIT 1 15-20 days	skill 1: Analyze visual representations of scientific concepts and processes. skill 2: Scientific Experiments and Investigations: Analyze research studies that test scientific principles 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.	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	 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. 	http://www.nysed.gov/common/nysed/files/programs/crs/culturally-responsive-sustaining-education-framework.pdf	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. 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. 3., HS-LS4-1. Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.
Biochemistry of Living Things EQ: What kinds of food do humans need to consume in order to have a healthy diet?	UNIT 2 22-28 days	SKILL 1: Analyze visual representations of scientific concepts and processes. SKILL 2: Scientific Experiments and Investigations:	NYT Article- No work no food- pandemic deepens global hunger The Other Way Covid Will Kill: Hunger	 Pre test using SMART feedback Hexagon strategy – introduction Photosynthesis Lab Gizmo Photosynthesis Lab – Modeling 		HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within

	nalyze research	<u>CK-12:</u>	• SMART rubric Essay-	multicellular
stu	udies that test	<u>Photosynthesis</u>	Global food	organisms.
sci	cientific principles		consumption & climate	
		NewsELA- Forest	change	HS-LS1-3: Plan and
	KILL 3: Determine	fires burning in the	• Cellular respiration Lab	conduct an
the	ne central ideas or	Amazon raise	Chemical Indicators	investigation to
con	onclusion of a text:	concerns about	• Enzyme Lab- STEM	provide evidence that
Tra	race the text's	climate change	Case	feedback mechanisms
exp	xplanation or		• NYS LAB 1- Diffusion	maintain
dej	epiction of a	Science Daily:	through a membrane	homeostasis.
	omplex process,	Feeding the world	PRT 1	
1 1 ^	henomenon or	without further	• Final Exam	HS-LS1-7: Use a
	oncept: Provide an	<u>deforestation is</u>		model to illustrate
	ccurate summary of	<u>possible</u>		that cellular
the	ne text.			respiration is a
		Cellular Respiration		chemical process
	KILL 4: Write a	in Yeast		whereby the bonds of
	aim and support that			food molecules and
	aim with scientific	How Science Works		oxygen molecules are
	vidence from texts,			broken and the bonds
	ata tables, diagrams,	newela: Don't cut		in new compounds
	nd individual	food stamps, doctors		are formed, resulting
exp	xperiments.	tell Congress		in a net transfer of
				energy.
				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.
				HS-LS2-7: Design,
				evaluate, and refine a
				solution for reducing
				the impacts of human
				activities on the

					environment and biodiversity.
Homeostasis in the Human Body EQ: How do living things respond to internal and external changes in its environment?	UNIT 3 20-25 days	skill 1: Analyze visual representations of scientific concepts and processes. skill 2: Scientific Experiments and Investigations: Analyze research studies that test scientific principles 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. skill 4: Write a claim and support that claim with scientific evidence from texts, data tables, diagrams, and individual experiments.	Homeostasis-Reading Diabetes Article Oxygen transport, CO2 Removal Video Oxygen Transport Gas Exchange Article Respiratory PPT Diffusion and Osmosis CK-12 Reading Osmosis Contractile Vacuoles and Guard Cells Enzyme Article	 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 	HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
Disruptions of homeostasis, diseases, and epidemiology EQ: How can geospatial technology	UNIT 4 20-23 days	SKILL 1: Analyze visual representations of scientific concepts and processes. SKILL 2: Scientific Experiments and Investigations:	Spanish Flu -1918 Innate Immunity Vaccines and Immunity	 Pretest Lab – Viral Transmission Lab- Disease Spread Lab- Antibiotic Resistance 	HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions

influence our decisions to trust science? Comparative	Unit 5	Analyze research studies that test scientific principles 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. SKILL 4: Write a claim and support that claim with scientific evidence from texts, data tables, diagrams, and individual experiments.	Reading: Why collect demographic data during a pandemic? Polio Article- Nat Geo Effectiveness of Masks- Article Immune Failures & HIV HIV Tuberculosis Ending Small Pox Article Antibiotic Resistance Antibiotic Resistance Article Cancer Video Log Article: Lawmaker proposes warning labels for sugary drinks in California Diabetes CDC Resource Asexual	 Graffiti Walk comparing and contrasting Tuberculosis KWLS Chart Read, generate, sort, and solve- HIV Reading/annotations using anchor charts Final unit exam 	within multicellular organisms. HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. HS-LS4-1: Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence. 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.
Reproduction	15 days	visual representations of scientific concepts	Reproduction Article	• Lab- Brine shrimp hatching success	and use a model to illustrate the
EQ: How can		and processes.	Asexual	 Lab- Comparing Bird 	hierarchical
_		and processes.	Reproduction-Bacteri	and Reptile Eggs	organization of
comparing		CVII I 2. Coiontico	-		
reproductive		SKILL 2: Scientific	<u>a</u>	• Lab- Flower Dissection	interacting
structure and		Experiments and	-	• Lab- Mitosis	systems that provide

function provide us	Investigations:	Internal and External	Video on explaining	 specific functions
with evidence for	Analyze research	Fertilization video	mitosis and answer	within multicellular
the evolution of all	studies that test		questions	organisms.
life?	scientific principles	Mitosis and Meiosis	 CER about Mitosis vs. 	
		<u>video</u>	Meiosis	HS-LS1-3: Plan and
	SKILL 3: Determine		 Sexual reproduction 	conduct an
	the central ideas or	TEDED-	inquiry activity	investigation to
	conclusion of a text:	Reproductive system-	 Flow chart construction 	provide evidence
	Trace the text's	How gonads go	 Reproductive health 	that feedback
	explanation or		policy module	mechanisms maintain
	depiction of a	TEDED-Sex	 Create a labeled 	homeostasis.
	complex process,	determination: More	diagram showing the	
	phenomenon or	complicated than you	steps that must occur	HS-LS4-1:
	concept: Provide an	thought - Aaron	for a multiple birth to	Communicate
	accurate summary of	Reedy	occur in a mammalian	scientific information
	the text.		species (such as cats).	that common ancestry
		<u>Human Reproduction</u>	Include information	and biological
	SKILL 4: Write a	and Childbirth Video	about gamete formation	evolution are
	claim and support that		and fertilization	supported by multiple
	claim with scientific	The role of cell	Think, talk, open,	lines of empirical
	evidence from texts,	division	exchange activity	evidence.
	data tables, diagrams,		• Regents Questions	
	and individual	Evolution Interactive	surrounding	HS-LS4-5: Evaluate
	experiments.		reproduction (asexual,	the evidence
		Which Animals Can	sexual, mitosis and	supporting claims that
		Have The Most	meiosis) and human	changes in
		Babies? [Infographic]	reproduction	environmental
			(menstrual cycle, male	conditions may result
		Reproductive health	and female	in: (1) increases in the
		<u>policies</u>	reproductive systems,	number of individuals
			placenta and prenatal	of some species, (2)
		<u>Life Greatest Miracle</u>	care)	the emergence of new
		<u>Video</u>	Final Exam	species over time, and
				(3) the extinction of
		CK-12 Teratogens		other species.
		CIV 10 M		
		CK-12 Menstrual		
I I				
		Cycle		

Genetics,	Unit 6	SKILL 1: Analyze	Video- Twin Teens:	• Pre test	HS-LS1-2: Develop
Biotechnology, and	19-24 days	visual representations	One Black, One	 Inventory of observable 	and use a model to
Evolution	•	of scientific concepts	White, Celebrate	human traits	illustrate the
		and processes.	Their Differences	 Reading and 	hierarchical
EQ:		1		annotations for breast	organization of
		SKILL 2: Scientific	Observable Human	cancer genes	interacting
What makes us all		Experiments and	Characteristics	• NYS LAB 3-	systems that provide
different?		Investigations:	Article	Biodiversity and	specific functions
		Analyze research		Relationships	within multicellular
		studies that test	Breast Cancer-	• NYS Lab 4- Beaks of	organisms.
		scientific principles	<u>Article</u>	Finches	
				• Gel electrophoresis Lab	HS-LS3-1: Ask
		SKILL 3: Determine	CK-12 DNA	 DNA Structure Lab 	questions to clarify
		the central ideas or		 DNA Model Lab 	relationships about
		conclusion of a text:	CK-12 Article- DNA	Gizmo	the role of DNA and
		Trace the text's	Structure and	 Mutations Lab Gizmo 	chromosomes in
		explanation or	<u>Replication</u>	 Transcription Lab 	coding the
		depiction of a		 Breakfast proteins 	instructions for
		complex process,	Video- What is DNA	activity	characteristic traits
		phenomenon or	and How Does it	 Epigenetics worksheet 	passed from parents
		concept: Provide an	Work?	• Exit tickets	to offspring.
		accurate summary of		Final Exam	
		the text.	Flocabulary- Genes		HS-LS2-7: Design,
		CIVIL A MAN	and Heredity		evaluate, and refine a
		SKILL 4: Write a	G. 1 G. 1		solution for reducing
		claim and support that	Study Stack		the impacts of human
		claim with scientific	3371 (A (* 1 H 3.T)		activities on the
		evidence from texts,	WhatArticle" Nature		environment and
		data tables, diagrams,	vs. nurture: Study on		biodiversity.
		and individual	twins shows athletic		HS-LS3-2: Make and
		experiments.	destiny not set at birth makes muscles grow?		defend a claim based
			makes muscles grow!		on evidence
			Gene Expression		that inheritable
			PHET		genetic
			1111/1		variations may result
			CK-12-Proteins,		from (1) new genetic
			<u>CK-12-110tcms</u> , <u>CK-12 RNA, CK-12</u>		combinations through
			Article Transcription		meiosis, (2) viable
			ZITUOIC TIMISCITPHOIL		errors occurring
					during replication,
					and/or (3) mutations

		1	ADVE A C 1 C	T	1	1.1
			NYT Article - One			caused by
			Twin Exercises, the			environmental
			Other Doesn't			factors.
			Article" Nature vs.			HS-LS4-1:
			nurture: Study on			Communicate
			twins shows athletic			scientific information
			destiny not set at birth			that common ancestry
						and biological
			ck-12 Article-			evolution are
			<u>Mutations</u>			supported by multiple
						lines of empirical
			CK-12 Article-			evidence.
			Effects of mutations			
						HS-LS4-2: Construct
			TEDED Video- What			an explanation based
			is epigenetics			on evidence that the
						process of
			CK-12 Article			evolution primarily
			Biotechnology			results from four
						factors: (1) the
			DNA Fingerprinting			potential for a species
			Plix.			to increase in number,
						(2) the heritable
			CK-12 Article:			genetic variation of
			Ethical, Legal, and			individuals in a
			Social Issues in			species due to
			Biotechnology			mutation and sexual
			<u> Dioteciniology</u>			reproduction, (3)
						competition for
						limited resources, and
						(4) the proliferation
						of those organisms
						that are better able to
						survive and reproduce
El	TI*4 =	CIZILI 1. A 1	V'.l. D.	Due to et		in the environment.
Ecology	Unit 7	SKILL 1: Analyze	Video- Beavers:	• Pre test		HS-LS2-1: Use
EO. II.	22-25 days	visual representations	Creators of habitats	• Lab - Abiotic and		mathematical and/or
EQ: How can we		of scientific concepts	CIV 10 E	Biotic Factors Gizmo		computational
redesign NYC		and processes.	CK-12 Food chains	• Lab- Kelp population		representations to
infrastructure to be			CK-12 Energy Flow	• Lan- Deer predation /		support explanations
				starvation		of factors that affect

inclusive of		SKILL 2: Scientific	CK-12 Trophic	• Lab- River ecology	carrying capacity of
ecosystems?		Experiments and	Levels	• Lab- Modeling	ecosystems at
ccosystems:		Investigations:	Census Clock	population growth	different scales.
		Analyze research		• Symbiotic	different scales.
		studies that test	Characteristics of	Relationships	HS-LS2-2: Use
		scientific principles	Populations	presentation	mathematical
		Scientific principles		• 3D Diorama of NYC	representations to
		SKILL 3: Determine	Graphs	redesigned	support and revise
		the central ideas or		• Final assessment	explanations based on
		conclusion of a text:	Interaction	• Final assessment	evidence about
		Trace the text's	Article CK-12		factors affecting
			Biodiversity		
		explanation or	Wolves and Bunnies		biodiversity and
		depiction of a	Biomes Interactive		populations in
		complex process,	CK-12 Article:		ecosystems of different scales.
		phenomenon or concept: Provide an	Ecological		different scales.
		accurate summary of	Succession		HS-LS2-6: Evaluate
		,			
		the text.	Succession EdPuzzle		claims, evidence, and
		SKILL 4: Write a	Mount St. Hellens		reasoning that the
			Ecological Video River Ecology -		complex interactions
		claim and support that claim with scientific	Invasive Species Lab		in ecosystems maintain relatively
		evidence from texts,	invasive Species Lab		consistent numbers
		data tables, diagrams,			and types of
		and individual			organisms in stable
					conditions, but
		experiments.			changing
					conditions may result
					1
					in a new ecosystem.
					HS-LS2-7: Design,
					evaluate, and refine a
					solution for reducing
					the impacts of human
					activities on the
					environment and
					biodiversity
					orogiversity
Climate Change &	Unit 8	SKILL 1: Analyze	Google Earth	• Pre test	HS-LS2-1: Use
Human Impact	14-18 days	visual representations		 Comparing biodiversity 	mathematical and/or
_		of scientific concepts		lab	computational
		and processes.		 Greenhouse effect lab 	 representations to

EQ: How do we as		Video- What have	• The air we breathe	support explanations
a global community	SKILL 2: Scientific	we done to planet	formative quiz	of factors that affect
begin to restore	Experiments and	Earth?	 Sea ice quiz 	carrying capacity of
Earth back to a	Investigations:		 Edpuzzle 	ecosystems at
natural balance?	Analyze research	Human Population	 Carbon Cycle Gizmo 	different scales.
	studies that test	<u>Slides</u>	Lab	
	scientific principles		 Acid precipitation lab 	HS-LS2-2: Use
		Population Growth	Final Exam	mathematical
	SKILL 3: Determine	Simulation	 Letter to congress 	representations to
	the central ideas or		addressing climate	support and revise
	conclusion of a text:	Trade-offs	change	explanations based on
	Trace the text's			evidence about
	explanation or	Why is biodiversity		factors affecting
	depiction of a	so important?		biodiversity and
	complex process,			populations in
	phenomenon or	Natures Pharmacy		ecosystems of
	concept: Provide an	PBS Video		different scales.
	accurate summary of			
	the text.	Gimkit Climate		HS-LS2-6: Evaluate
		Change Review		claims, evidence, and
	SKILL 4: Write a			reasoning that the
	claim and support that	CK-12 Air Pollution		complex interactions
	claim with scientific	<u>Article</u>		in ecosystems
	evidence from texts,			maintain relatively
	data tables, diagrams,	CK-12 Ozone		consistent numbers
	and individual	Depletion Article		and types of
	experiments.			organisms in stable
		Global Temperature		conditions, but
		Anomalies Video		changing
				conditions may result
		Climate Time		in a new ecosystem.
		Machine - NASA		
				HS-LS2-7: Design,
		Modeling Increases		evaluate, and refine a
		in Sea Level		solution for reducing
				the impacts of human
		NRDC Article -		activities on the
		Global climate		environment and
		<u>change</u>		biodiversity.
		Earth's Carbon		HS-LS4-1:
		<u>Cycle</u>		Communicate

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			scientific information
			that common ancestry
			and biological
			evolution are
			supported by multiple
			lines of empirical
			evidence.
			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.
			in the environment.