Southern Cayuga Central School District
Emily Howland Elementary
Curriculum Map 2024-2025

Subject: Science **Grade: 6**

Instructional Days	Essential Questions	Content/Disciplinary Core Ideas	Resources	NGSS Stds.	Assessments	Vocabulary
Introduction: Who is a Scientist?						
10 days	Introduction: Who is a scientist? What do scientists do?	The lives and accomplishments of eight scientists: John James Audubon, Charles William Beebe (known as William Beebe), Rachel Carson, Benjamin Banneker, Barnum Brown, Julie Codispoti, Gregor Mendel, and Jean-Bernard-Léon Foucault. Compare and contrast scientists in order to identify scientists behaviors that led to scientific discoveries: observing, classifying, communicating and experimenting. Introduction to Science and Engineering Practices and Cross cutting concepts.	Chapter 6 Scientists like me from Inquiring Scientists, Inquiring Readers: Using Nonfiction to Promote Science Literacy, Grades 3–5 by: Jessica Fries-Gaither and Terry Shiverdecker		Group Assessment: Presentation on an assigned scientist. End of Unit Assessment: Redraw picture of a scientist and explain what you learned about scientists and what they do.	● observe ● classify ● communicate ● experiment

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Module 1: What is going on inside of Me?						
10 weeks	What is going on inside of me?	**LS1.A: Structure and Function** All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular). (MS-LS1-1) Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2) In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are	IQWST	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. 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. MS-LS1-3. Construct an explanation supported by evidence for how the body is	Formative Assessments: Multiple Choice Quizzes, Short Answer using CER format, Lesson Activities Summative Assessments: End of Unit Projects	● field of view ● magnification ● specimen ● sample ● cell ● cell membrane ● nucleus ● tissue ● cytoplasm ● claim ● evidence ● data ● qualitative ● quantitative ● system ● sub-system ● circulatory system ● contract ● relax ● cartilage ● tendons ● muscular system ● skeletal system ● food ● fats ● protein

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		groups of cells that work together to form tissues and organs that are specialized for particular body functions. (MS-LS1-3) **LS1.D: Information Processing** Each sense receptor responds to different inputs (electromagnetic, mechanical, chemical), transmitting them as signals that travel along nerve cells to the brain. (MS-LS1-8)		composed of interacting systems consisting of cells, tissues, and organs working together to maintain homeostasis. MS-LS1-8. Gather and synthesize information that sensory receptors respond to stimuli, resulting in immediate behavior and/or storage as memories.		● carbohydrates ● calories ● saliva ● digestion ● digestive system ● stomach ● small intestine

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	What is going on inside of me?	**PS3.A: Definitions of Energy** (NYSED) Temperature is a measure of the average kinetic energy of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, phases (states), and amounts of matter present. (MS-PS3-3),(MS-PS3-4) **PS3.B: Conservation of Energy and Energy Transfer** Energy is spontaneously transferred out of hotter regions or objects and into colder ones. (MS-PS3-3) (NYSED) The amount of energy transfer needed to change the temperature of a matter sample by a given amount depends on the nature of the matter, the mass of the		MS-PS3-3. Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. MS-PS3-4. Plan and conduct an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the temperature of the sample of matter. MS-ETS1-1. Define the criteria and constraints of a design problem		● absorb ● large intestine ● villi ● capillaries ● dietary fiber ● cellulose ● excretory system ● diffusion ● osmosis ● mitosis ● platelets ● growth plate ● inhale ● exhale ● respiratory system ● neuron ● receptor ● voluntary ● involuntary ● nervous system ● stimuli ● temperature ● particles ● brain ● spinal cord

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		sample, and the environment. (MS-PS3-4) **ETS1.A: Defining and Delimiting Engineering Problems** The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions. (MS-ETS1-1)		with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.		

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	What is going on inside of me?	**ETS1.B: Developing Possible Solutions** There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. (MS-ETS1-2),(MS-ETS1-3) Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors. (MS-ETS1-3) **ETS1.C: Optimizing the Design Solution** Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the		MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.		

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		redesign process—that is, some of those characteristics may be incorporated into the new design. (MS-ETS1-3)				
Module 2: Why is it so Challenging to Predict the Weather?						
10 weeks	Why is it so challenging to predict weather?	**ESS2.C: The Roles of Water in Earth's Surface Processes** The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns. (MS-ESS2-5)	IQWST	MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.	Formative Assessments: Multiple Choice Quizzes, Short Answer using CER format, Lesson Activities Summative Assessments: End of Unit Projects	● matter ● energy ● variable ● weather ● conditions ● atmosphere ● thermal energy ● temperature ● solar energy ● absorption ● air mass

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Instructional Days	Essential Questions	Content/Disciplinary Core Ideas	Resources	NGSS Stds.	Assessments	Vocabulary
	Why is it so challenging to predict weather?	**ESS2.C: The Roles of Water in Earth's Surface Processes** (NYSED) Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation, sublimation, deposition, precipitation, infiltration, and runoff. (MS-ESS2-4) (NYSED) Global movements of water and its changes in form are driven by sunlight and gravity. (MS-ESS2-4) Variations in density due to variations in temperature and salinity drive a global pattern of interconnected ocean currents. (MS-ESS2- 6) The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and		MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. MS-PS1-4. Develop a model that predicts and describes changes in particle motion, temperature, and phase (state) of a substance when thermal energy is added or removed. MS-PS3-3. Apply scientific principles to design, construct, and test		● kinetic energy ● conduction ● transfer ● transmit ● reflected ● latitude ● longitude ● equator ● intensity ● prime meridian ● climate ● convection ● density ● lift ● equilibrium ● front ● stable ● instability ● barometer ● pressure ● constraints ● criteria ● water vapor ● humidity ● reservoir ● flow ● gravity

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		ocean temperatures and currents, are major determinants of local weather patterns. (MS-ESS2-5) **ESS2.D: Weather and Climate** Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns. (MS-ESS2-6)		a device that either minimizes or maximizes thermal energy transfer.* MS-PS3-4. Plan and conduct an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the temperature of the sample of matter.		● evaporation ● condensation ● precipitation ● infiltration ● hydrologic cycle ● coriolis effect ● deflection ● elevation ● topography

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Instructional Days	Essential Questions	Content/Disciplinary Core Ideas	Resources	NGSS Stds.	Assessments	Vocabulary
	Why is it so challenging to predict weather?	**ESS2.D: Weather and Climate** Because these patterns are so complex, weather can only be predicted probabilistically. (MS-ESS2-5) The ocean exerts a major influence on weather and climate by absorbing energy from the sun, releasing it over time, and globally redistributing it through ocean currents. (MS-ESS2-6) **PS3.A: Definitions of Energy** (NYSED) Temperature is a measure of the average kinetic energy of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, phases (states), and amounts of matter present. (MS-PS3-3),(MS-PS3-4)		MS-PS3-5. Construct, use, and present an argument to support the claim that when work is done on or by a system, the energy of the system changes as energy is transferred to or from the system. MS-ESS2-4. Develop a model to describe the cycling of water through Earth's systems driven by energy from the Sun and the force of gravity. MS-ESS2-5. Collect data to provide evidence for how the motions and		● windward ● leeward

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		PS3.B: Conservation of Energy and Energy Transfer (NYSED) The amount of energy transfer needed to change the temperature of a matter sample by a given amount depends on the nature of the matter, the mass of the sample, and the environment. (MS-PS3-4) When the motion energy of an object changes, there is inevitably some other change in energy at the same time. (MS-PS3-5)		complex interactions of air masses results in changes in weather conditions.		
Instructional Days	**Essential Questions**	**Content/Disciplinary Core Ideas**	**Resources**	**NGSS Stds.**	**Assessments**	**Vocabulary**
	Why is it so challenging to predict weather?	**ETS1.B: Developing Possible Solutions** A solution needs to be tested, and then modified on the basis of the test results, in order to improve it. (MS-ETS1-4)		MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of Earth cause patterns of atmospheric and oceanic circulation		

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		Models of all kinds are important for testing solutions.(MSETS1-4) There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. (MS-ETS1-2),(MS-ETS1-3) **ETS1.C: Optimizing the Design Solution** The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution. (MS-ETS1-4) **LS1.B: Growth and Development of Organisms** Genetic factors as well as local conditions affect the growth of the adult plant. (MS-LS1-5)		that determine regional climates. MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. MS-LS1-5. Construct a scientific explanation based on evidence for		

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				how environmental and genetic factors influence the growth of organisms.		
Instructional Days	**Essential Questions**	**Content/Disciplinary Core Ideas**	**Resources**	**NGSS Stds.**	**Assessments**	**Vocabulary**
Module 3: Why do Organisms Look the Way they do?						
10 weeks	Why do organisms look the way they do?	**LS3.A: Inheritance of Traits** Variations of inherited traits between parent and offspring arise from genetic differences that result from the subset of chromosomes (and therefore genes) inherited. (MS-LS3-2) **LS1.B: Growth and Development of Organisms** Organisms reproduce, either sexually or asexually, and transfer their genetic information to their offspring. (secondary to MS-LS3-2) Animals engage in characteristic behaviors that	IQWEST	MS-LS3-2. Develop and use a model to describe how asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation. MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and	Formative Assessments: Multiple Choice Quizzes, Short Answer using CER format, Lesson Activities Summative Assessments: End of Unit Projects	● biology ● species ● variation ● trait ● inherited ● acquired ● genetics ● DNA ● generation ● pollination ● pedigree ● generation ● gamete ● gene ● chromosome ● allele ● mitosis ● meiosis ● pigment ● genotype

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		increase the odds of reproduction. (MS-LS1-4) Genetic factors as well as local conditions affect the growth of the adult plant. (MS-LS1-5) **LS1.A: Structure and Function** Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2)		ways parts of cells contribute to the function. MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.*		● phenotype ● dominant ● recessive ● histogram ● hypothesis ● experimental group ● control group

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	Why do organisms look the way they do?	**ESS2.C: The Roles of Water in Earth's Surface Processes** (NYSED) Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation, sublimation, deposition, precipitation, infiltration, and runoff. (MS-ESS2-4) **ESS3.C: Human Impacts on Earth Systems** Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different		MS-ESS2-4. Develop a model to describe the cycling of water through Earth's systems driven by energy from the Sun and the force of gravity. MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. MS-LS1-4. Use argument based on empirical evidence and scientific reasoning		

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		impacts (negative and positive) for different living things. (MS-ESS3-3)		to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants, respectively.		