

Glenwood Community Schools

K-5 Science Curriculum

Mission Statement

Our mission is to engage all students in a challenging, sequential, and differentiated science curriculum that will develop critical thinkers, problem solvers, and effective communicators.

We believe that all students should have access to a high-quality science education that provides them with the skills and knowledge they need to be well-informed citizens, to be prepared for college and careers, and to understand and appreciate the scientific world.

A special thank you to the following individuals for their hard work and dedication who have served on the District K-5 Science Subject Area Committee.

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Glenwood Community Elementary School
Kindergarten Science Curriculum
Approved Date – June 2018

Course ID: SCI.K	Course Purpose: Kindergarten science is an inquiry-based course that builds students' understanding of how objects move and interact, the relationship between plants and animals and the places they live, the patterns in weather, and effects of sunlight.
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Course Outcomes	Outcome Components	Description	Iowa Core
SCI.K.1	The student will investigate and compare how objects move and interact.		
	SCI.K.1.1	Ask questions, make observations, and gather information to verify the effects of pushes & pulls.	K-PS2-1
	SCI.K.1.2	Plan and conduct an investigation to compare the effects of pushes and pulls on the motion of an object.	K-PS2-1
	SCI.K.1.3	Design a plan to alter the speed of an object in motion.	K-PS2-2
SCI.K.2	The student will evaluate the relationship between the needs of different plants and animals and the places they live.		
	SCI.K.2.1	Use observations to describe patterns of what plants and animals need to survive.	K-LS1-1
	SCI.K.2.2	Construct an argument supported by evidence for how plants and animals can change the environment to meet their needs.	K-ESS2-2
	SCI.K.2.3	Communicate solutions that will reduce the impact of humans on the land, water, air, and/or plants and animals in the local environment.	K-ESS3-3
	SCI.K.2.4	Develop a model to represent the relationship between the needs of different plants and animals and the places they live.	K-ESS3-1
SCI.K.3	The student will discuss and assess patterns in weather and effects of sunlight.		
	SCI.K.3.1	Make observations to determine the effect of sunlight on Earth's surface.	K-PS3-1
	SCI.K.3.2	Assess the use of weather forecasting for preparing for and responding to severe weather.	K-ESS2-1
	SCI.K.3.3	Summarize and communicate observations of local weather conditions to describe patterns over time.	K-ESS2-1
	SCI.K.3.4	Design and build a model for the purpose of reducing the warming effect of sunlight on Earth's surface.	K-PS3-2-2

Glenwood Community Elementary School
First Grade Science Curriculum
Approved Date – June 2018

Course ID: SCI.1	Course Purpose: First grade science is an inquiry-based course that builds students' understanding of space systems, light and sound waves, and plant and animal structures and behaviors.
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Course Outcomes	Outcome Components	Description	Iowa Core
SCI.1.1	The student will investigate to analyze light and solar patterns.		
	SCI.1.1.1	Make observations to construct an evidence-based argument that objects in darkness can be seen only when illuminated.	1-PS4-2
	SCI.1.1.2	Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.	1-PS4-3
	SCI.1.1.3	Make and record observations at different times of year to relate the amount of daylight to the time of year.	1-ESS1-2
	SCI.1.1.4	Use and record observations of the sun, moon, and stars or models of the sun, moon, and stars to describe patterns that can be predicted.	1-ESS1-1
SCI.1.2	The student will investigate devices that use light or sound to communicate over a distance.		
	SCI.1.2.1	Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	1-PS4-1
	SCI.1.2.2	Define a simple problem that can be solved through the development of a new or improved object or tool.	K-2-ETS1-1
	SCI.1.2.3	Design and build a device that uses light or sound to solve the problem of communicating over a distance.	1-PS4-4
	SCI.1.2.4	Compare the performance strengths and weaknesses of two devices that use light and sound to communicate.	K-2-ETS1-3
SCI.1.3	The student will describe behaviors and create models of the structures that help plants and animals survive.		
	SCI.1.3.1	Determine patterns in behavior of parents and offspring that help offspring survive.	1-LS1-2
	SCI.1.3.2	Make observations that young plants and animals are alike, but not exactly like, their parents.	1-LS1-3
	SCI.1.3.3	Develop a simple sketch, drawing, or physical model illustrate how the shape of an object helps it function.	K-2-ETS1-2
	SCI.1.3.4	Design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.	1-LS1-1

Glenwood Community Elementary School
Second Grade Science Curriculum
Approved Date – June 2018

Course ID: SCI.2	Course Purpose: Second grade science is an inquiry-based course that builds students understanding of where water is found on Earth in both solid and liquid form, how land changes over time, and the needs of plants.
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Course Outcomes	Outcome Components	Description	Iowa Core
SCI.2.1	The student will examine patterns of matter found on the Earth in solid, liquid, and gas forms.		
	SCI.2.1.1	Conduct an investigation to describe and classify different kinds of materials by their observable properties.	2-PS1-1
	SCI.2.1.2	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.	2-PS1-4
	SCI.2.1.3	Identify where water is found on Earth and that it can be solid or liquid.	2-ESS2-3
	SCI.2.1.4	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.	
SCI.2.2	The student will develop a model of how land changes over time.		
	SCI.2.2.1	Construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object(recycling/conservation).	2-PS1-3
	SCI.2.2.2	Combine information from several sources to provide evidence that Earth events can occur quickly and slowly.	2-ESS1-1
	SCI.2.2.3	Compare the effectiveness of multiple solutions designed to slow or prevent wind or water from changing the shape of the land.	2-ESS2-1
	SCI.2.2.4	Develop a model to represent the shapes and kinds of land and bodies of water in an area.	2-ESS2-2
SCI.2.3	The student will investigate the needs of plants and how animals and designed solutions can help meet plant's needs.		
	SCI.2.3.1	Plan and conduct an investigation to determine if plants need sunlight and water to grow.	2-LS2-1
	SCI.2.3.2	Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.	2-LS2-2
	SCI.2.3.3	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	K-2-ETS 1-2
	SCI.2.3.4	Make observations of plants (and animals) to compare the diversity of life in different habitats.	2-LS4-1

Glenwood Community Elementary School
Third Grade Science Curriculum
Approved Date – June 2018

Course ID: SCI.3	Course Purpose: Third grade science is an inquiry- based course that builds students’ understanding of fossils, variations in traits in the same species, how traits are influenced by inheritance and the environment, weather patterns and climate, and the types of interactions involving motion, electricity, and magnetism.
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Course Outcomes	Outcome Components	Description	Iowa Core
SCI.3.1	The student will analyze types of interactions involving motion, electricity, and magnetism.		
	SCI.3.1.1	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	3-PS2-1
	SCI.3.1.2	Analyze observations and /or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion.	3-PS2-2
	SCI.3.1.3	Generate questions to determine cause and affect relationships of electric or magnetic interactions between two objects not in contact with each other.	3-PS2-3
	SCI.3.1.4	Define and solve a simple design problem by applying scientific ideas about magnets.	3-PS2-4
SCI.3.2	The student will evaluate how fossils are evidence of major change over time in the environment.		
	SCI.3.2.1	Interpret and compare data from fossils to provide evidence of the organisms and the environments in which they lived long ago.	3-LS4-1
	SCI.3.2.2	Create a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	3-LS4-4
	SCI.3.2.3	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on material, time, or cost.	3-ETS1-1
SCI.3.3	The student will compare and contrast how variations in traits among individuals of the same species can provide advantages in survival and reproduction.		
	SCI.3.3.1	Construct an argument to support the claim that some animals form groups to help members survive.	3-LS2-1
	SCI.3.3.2	Choose evidence to construct a claim to explain how the variations in characteristics among individuals of the same species may provide advantages in survival, mate selection, and reproduction.	3-LS4-2
	SCI.3.3.3	Construct an argument with evidence to support the claim that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	3-LS4-3
	SCI.3.3.4	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	3-ETS1-2
SCI.3.4	The student will analyze the traits of plants and animals in order to explain how these traits are influenced by both inheritance and the environment.		
	SCI.3.4.1	Develop illustrations that show organisms have unique and diverse life cycles while also illustrating common cycles of birth, growth, reproduction, and death.	3-LS1-1
	SCI.3.4.2	Analyze and interpret data to support the claim that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.	3-LS3-1
	SCI.3.4.3	Use evidence to support the claim that traits can be influenced by the environment.	3-LS3-2
SCI.3.5	The student will evaluate the connection between weather patterns and climate.		
	SCI.3.5.1	Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	3-ESS2-1
	SCI.3.5.2	Construct a claim about the merit of a design solution that reduces the impacts of a weather related hazard.	3-ESS3-1
	SCI.3.5.3	Collect and combine information to describe climates in different regions of the world.	3-ESS2-2

Glenwood Community Elementary School
Fourth Grade Science Curriculum
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Course ID: SCI.4	Course Purpose: Fourth grade science is an inquiry-based course that builds students' understanding of how organisms receive and process information, collision of objects, the transfer of energy, the effect of water on land, and the negative impact of natural hazards and use of natural resources.
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Course Outcomes	Outcome Components	Description	Iowa Core
SCI.4.1	The student will develop a model to illustrate how organisms receive and process information.		
	SCI.4.1.1	Develop a model to illustrate that light reflecting from objects and entering the eye allows objects to be seen.	4-PS4-2
	SCI.4.1.2	Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.	4-LS1-1
	SCI.4.1.3	Construct an argument to support the claim that plants and animals have internal and external structures that function to support survival, growth, behavior and reproduction.	4-LS1-1
	SCI.4.1.4	Develop a model and describe how animals receive different types of information through their senses, process the information in their brain and respond to the information in different ways.	4-LS1-2
	SCI.4.1.5	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	3-5-ETS1-1
SCI.4.2	The student will describe what is needed to move information and energy from place to place.		
	SCI.4.2.1	Make observations in order to provide evidence that energy can be transferred from place to place by sound, light, heat and electric currents.	4-PS3-2
	SCI.4.2.2	Design an experiment to create and test a device that converts energy from one form to another.	4-PS3-4
	SCI.4.2.3	Generate and compare multiple patterns to transfer information.	4-PS4-3
SCI.4.3	The student will create a model to demonstrate what happens when objects collide.		
	SCI.4.3.1	Use evidence to construct an explanation relating the speed of an object to the energy of that object.	4-PS3-1
	SCI.4.3.2	Formulate questions and predict outcomes about the changes in energy that occur when objects collide.	4-PS3-3
	SCI.4.3.3	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	3-5-ETS1-3
SCI.4.4	The student will construct a model to explain the effect that water has on land.		
	SCI.4.4.1	Identify evidence from patterns in rock formations and fossils in rock layers for changes in a landscape over time to support an explanation for changes in a landscape over time.	4-ESS1-1
	SCI.4.4.2	Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.	4-ESS2-1
	SCI.4.4.3	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	3-5-ETS1-2
SCI.4.5	The student will investigate the negative effects of natural hazards and natural resource use in order to propose and defend reduces the negative impact.		
	SCI.4.5.1	Develop a model of waves to describe patterns in terms of amplitude and wavelength and that can cause objects to move.	4-PS4-1
	SCI.4.5.2	Analyze and interpret data from maps to describe patterns of Earth's features.	4-ESS2-2
	SCI.4.5.3	Obtain and combine information to describe how energy and fuels are derived from natural resources and how their uses affect the environment.	4-ESS3-1

	SCI.4.5.4	Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.	4-ESS3-2
	SCI.4.5.5	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	3-5-ETS1-2

Glenwood Community Elementary School
Fifth Grade Science Curriculum
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Course ID: SCI.5	<p>Course Purpose: Fifth grade science is an inquiry-based course that builds students’ understanding of the composition of living things, the weight of air, where rain comes from, and how far away the stars are.</p> <p>Outcome 1 focuses on physical and chemical changes in matter. Outcome 2 builds on Outcome 1 to focus on energy and matter flows in ecosystems. Outcome 3 extends this study to focus on larger Earth systems and how they affect one another. Outcome 4 shifts the scale to the immensely large, as students build understanding of space systems.</p>
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Course Outcomes	Outcome Components	Description	Iowa Core
SCI.5.1	The student will develop a model that describes the composition of living things.		
	SCI.5.1.1	Develop a model to describe that living things are made of particles too small to be seen.	
	SCI.5.1.2	Draw a diagram to illustrate how energy in animals’ food was once energy from the sun, and that energy in food is used for the purpose of body repair, growth, motion, and maintenance of body warmth.	5-PS3-1
	SCI.5.1.3	Support with evidence an argument that plants get the materials they need for growth chiefly from air and water.	5-LS1-1
	SCI.5.1.4	Develop a model (i.e. diagram) to illustrate the movement of matter among plants, animals, decomposers, and the environment.	5-LS2-1
	SCI.5.1.5	Generate and compare multiple possible solutions to a problem that living things face for survival, based on how well each is likely to meet the criteria and constraints of the problem.	3-5EET S1-2-
SCI.5.2	The student will develop models to explain the properties of air and how much air weighs.		
	SCI.5.2.1	Develop a model to describe that air is made up of particles too small to be seen.	5-PS1.1
	SCI.5.2.2	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of air is conserved.	5-PS1-2
	SCI.5.2.3	Make observations and measurements to identify the properties of air	5-PS1-3
	SCI.5.2.4	Conduct an investigation to determine whether the mixing of two or more substances, including gases, colorants, and odorants, results in physical or chemical changes.	5-PS1-4
	SCI.5.2.5	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	3-5-ETS 1-3
SCI.5.3	The student will develop a model describing where rain comes from.		
	SCI.5.3.1	Develop a model to describe that water is made of particles too small to be seen.	
	SCI.5.3.2	Support an argument that the gravitational force exerted by Earth on objects is directed down.	5-PS2-1
	SCI.5.3.3	Develop a model with examples to illustrate or describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	5-ESS2- 1
	SCI.5.3.4	Investigate and graph the amounts of saltwater and freshwater in various reservoirs to provide evidence about the distribution of water on Earth.	5-ESS2- 2
	SCI.5.3.5	Obtain and combine information about ways individual communities use science ideas to protect the Earth’s water resources.	5-ESS3- 1
	SCI.5.3.6	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	3-5-S1- 1
SCI.5.4	The student will develop a model to represent the distance of the stars.		
	SCI.5.4.1	Support an argument with evidence that the apparent brightness of the sun and stars is due to their relative distances from the Earth.	5-ESS1- 1

	SCI.5.4.2	Represent data in graphical displays to reveal patterns of daily changes in length and directions of shadows, day and night, and the seasonal appearance of some stars in the night sky.	5-ESS1-2
	SCI.5.4.3	Develop a model to describe that matter is made of particles too small to be seen.	5-PS1-1