Week	Title	Standards Covered
1	Science and Engineering	Nature of Science
2	Scientists and Engineers Use the Five Senses	
3	You Can be a Scientist or Engineer	
4	The Engineering Design Process	Science and Engineering S.K.11, S.K.12, S.K.13
Forces and Interactions: Pushes and Pulls		
5	Structure and Function	Crosscutting Concepts
6	Motion	**S.K.1** Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.
7	What is a Push?	
8	What is a Pull?	
9	Engineering: Push and Pull	**S.K.2** Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull. S.K.11, S.K.12, S.K.13
Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment		
10	Measurement and Data	Nature of Science
11	Living and Nonliving Things	Nature of Science
12	Plants Have Needs	**S.K.3** Use observations to describe patterns of what plants and animals (including humans) need to survive. S.K.11, S.K.12, S.K.13
13	Animals Have Needs	
14	Humans Have Needs	
15	Engineering: Needs	
16	Cause and Effect	Crosscutting Concepts
17	Plants Change the Environment	**S.K.4** Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. S.K.11, S.K.12, S.K.13
18	Animals Change the Environment	
19	Humans Change the Environment	
20	Engineering: Change	
21	Models	Nature of Science

Week	Title	Standards Covered
22	Food chains	**S.K.5** Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.
23	Habitats	
24	Engineering: Protect a Habitat	**S.K.6** Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment. S.K.11, S.K.12, S.K.13
	Weather and Climate	
25	Patterns	Crosscutting Concepts
26	The Sun	**S.K.9** Make observations to determine the effect of sunlight on Earth's surface.
27	Sun Protection	
28	Engineering: Sun Protection	**S.K.10** Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area. S.K.11, S.K.12, S.K.13
29	What is Weather?	**S.K.7** Use and share observations of local weather conditions to describe patterns over time.
30	Weather Has Patterns	
31	Severe Weather	**S.K.8** Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather. S.K.11, S.K.12, S.K.13
32	Engineering: Weather	

Week	Title	Standards Covered
1	Science and Engineering	Nature of Science
2	You Can Be a Scientist or Engineer!	
3	Teamwork	
4	Patterns	Crosscutting Concepts
5	The Engineering Design Process	Science and Engineering S.1.10, S.1.11, S.1.12
Waves: Light and Sound		
6	Cause and Effect	Crosscutting Concepts
7	What is Sound?	**S.1.1** Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.
8	Features of Sound	
9	What is Light?	**S.1.2** Make observations to construct an evidence-based account that objects can be seen only when illuminated.
10	Sources of Light	
11	Light On Materials	**S.1.3** Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.
12	Sound and Light	**S.1.4** Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance. S.1.10, S.1.11, S.1.12
13	Engineering: Sound and Light	
Structure, Function, and Information Processing		
14	Structure and Function	Crosscutting Concepts
15	Animals Have Parts That Help Them	**S.1.7** Use materials to 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. S.1.10, S.1.11, S.1.12
16	Animals Live In Many Places	
17	Plants Have Parts That Help Them	
18	Plants Live In Many Places	
19	Engineering: Animals & Plants	
20	Models	Nature of Science
21	Animal Offspring	**S.1.5** Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.
22	Plant Offspring	

Week	Title	Standards Covered
23	Animals and their Offspring	**S.1.6** Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. S.1.10, S.1.11, S.1.12
24	Plants and their Offspring	
25	Engineering: Learning from Offspring	
Space Systems: Patterns and Cycles		
26	Measurement and Data	Nature of Science
27	Objects in Space	**S.1.8** Use observations of the sun, moon, and stars to describe patterns that can be predicted.
28	Daytime Sky	
29	Nighttime Sky	
30	Phases of the Moon	
31	Seasons	**S.1.9** Make observations at different times of year to relate the amount of daylight to the time of year. S.1.10, S.1.11, S.1.12
32	Engineering Design: Sundial	

Week	Title	Standards Covered
1	What Is Science? What Is Engineering?	Nature of Science
2	How Scientists and Engineers Think and Act	
3	Working Together	
4	Engineering Design Process	Science and Engineering S.2.12, S.2.13, S.2.14
5	Crosscutting Concepts	Crosscutting Concepts
6	Measurement and Data	Nature of Science
Structure and Properties of Matter		
7	States of Matter	**S.2.1** Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
8	Properties of Matter	
9	Investigating Matter: Part One	
10	Investigating Matter: Part One	
11	Engineering Design: Catapults	**S.2.2** Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. S.2.12, S.2.13, S.2.14
12	Assembly and Disassembly	**S.2.3** Make observations to 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.
13	Changes in States of Matter	**S.2.4** Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.
Interdependent Relationships in Ecosystems		
14	Germination and Plant Growth	**S.2.5** Plan and conduct an investigation to determine if plants need sunlight and water to grow.
15	Plant Parts and Functions	**S.2.6** Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants. S.2.12, S.2.13, S.2.14
16	Pollination	
17	Seed Dispersal	
18	Engineering Design: Seed Dispersal or Pollination	

Week	Title	Standards Covered
19	Rainforest and Temperate Forest Habitats	**S.2.7** Make observations of plants and animals to compare the diversity of life in different habitats.
20	Tundra, Grassland, and Desert Habitats	
21	Saltwater and Freshwater Habitats	
22	Human Impacts on Habitats	This week is optional.
Earth's Systems: Processes that Shape the Earth		
23	Earth's Surface Changes Quickly	**S.2.8** Use information from several sources to provide evidence that Earth events can occur quickly or slowly.
24	Earth's Surface Changes Slowly	
25	Natural Disaster Safeguards	**S.2.9** Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. S.2.12, S.2.13, S.2.14
26	Engineering Design: Protection Against Flooding	
27	Engineering Design: Protection Against High Winds	
28	Landforms	**S.2.10** Develop a model to represent the shapes and kinds of land and bodies of water in an area.
29	Bodies of Water	
30	Water Cycle	**S.2.11** Obtain information to identify where water is found on Earth and that it can be solid or liquid. S.2.12, S.2.13, S.2.14
31	Engineering Design: My Community's Landforms and Bodies of Water	
32	Weather	This week is optional.

West Virginia Science
SCOPE & SEQUENCE

Week	Title	Standards Covered
1	Who Are Scientists and Engineers?	Nature of Science
2	Big Ideas of Science and Engineering	Crosscutting Concepts
3	Measurement and Data	Nature of Science
4	Engineering Design Process	Science and Engineering S.3.16, S.3.17, S.3.18
Forces and Interactions		
5	Forces	**S.3.1** Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
6	Patterns in Forces	**S.3.2** Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. S.3.17
7	Engineering Design: Why do I move when the car stops?	
8	Magnetic Forces	**S.3.3** Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
9	Electromagnets	
10	Electric Forces	
11	Engineering Design: Magnetic and Electric Forces	**S.3.4** Define a simple design problem that can be solved by applying scientific ideas about magnets. S.3.16, S.3.17, S.3.18
25,26,27	***From 5th Grade***	***S.3.5*** *Support an argument that the gravitational force exerted by Earth on objects is directed toward the center of the Earth.*
Interdependent Relationships in Ecosystems		
12	Surviving in a Group	**S.3.6** Construct an argument that some animals form groups that help members survive.
(13)	***(Fossils)***	***(used in 4th Grade: S.4.11)*** *Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.*
(14)	***(Clues from the Past)***	
15	Organisms in their Habitats	**S.3.7** Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. S.3.16, S.3.17, S.3.18
16	Engineering Design: The Big Mix up	
17	Changing Ecosystems	**S.3.8** Make 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. S.3.16, S.3.17, S.3.18

Week	Title	Standards Covered
18	People and the Ocean	**S.3.8** Make 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. S.3.16, S.3.17, S.3.18
19	Engineering Design: Water Collection	
Inheritance and Variation of Traits: Life Cycles and Traits		
20	Life Cycles	**S.3.9** Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
21	Inheriting Traits	**S.3.10** Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.
22	Families	
23	Adaptations	**S.3.11** Use evidence to support the explanation that traits can be influenced by the environment.
24	Are an Organism's Traits Influenced by the Environment?	
25	Variation Helps Organisms Survive	**S.3.12** Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
Weather and Climate		
26	What Will the Weather Be Today?	**S.3.13** Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.
27	Weather vs Climate	**S.3.14** Obtain and combine information to describe climates in different regions of the world.
28	Weather Hazards	**S.3.15** Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard. S.3.16, S.3.17, S.3.18
29	Engineering Design: Can We Control the Weather?	
30	Matter	These weeks are optional.
31	What Is Energy?	
32	Engineering Design: Heat Transfer	

Week	Title	Standards Covered
	Introduction to Science	
1	Measurement	Nature of Science
2	Data and Graphing	
3	Engineering Design Process	Science and Engineering S.4.14, S.4.15, S.4.16
4	Crosscutting Concepts	Crosscutting Concepts
5	Mindsets	Nature of Science
	Energy	
6	Sound Energy	**S.4.1** Use evidence to construct an explanation relating the speed of an object to the energy of that object.
7	Let's Play Ball!	
8	Law of Conservation of Energy	**S.4.2** Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. S.4.16
9	Electricity	
10	The Energy of Collision	**S.4.3** Ask questions and predict outcomes about the changes in energy that occur when objects collide. S.4.14
11	Types of Energy	**S.4.4** Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. S.4.14, S.4.15, S.4.16
12	Engineering Design: Rube Goldberg Machine	
(13)	***(Nonrenewable Energy)***	***(Used in 5th Grade: S.5.11)*** *Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.*
(14)	***(Renewable Energy)***	
	Waves: Waves and Information	
15	What Causes Changes in the Wavelength of a Wave?	**S.4.5** Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.
16	How Much Energy Is in a Wave?	
17	Transferring Data	**S.4.6** Generate and compare multiple solutions that use patterns to transfer information.
	Structure, Function, and Information Processing	
18	The Science of Eyesight	**S.4.7** Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.
19	Phases of the Moon	
20	What Is So Special About Leaves?	**S.4.8** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. S.4.14, S.4.15, S.4.16
21	Biodiversity	
22	Engineering Design:	

Week	Title	Standards Covered
	Hermit Crabs	
23	Animal Senses	**S.4.9** Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
24	The Five Senses	
25	Adaptation	
Earth's Systems: Processes that Shape the Earth		
26	What Is a Fossil?	**S.4.10** Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. S.4.16
27	The Rock Cycle	
13,14	***From 3rd Grade***	***S.4.11*** *Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.*
28	Weathering and Erosion	**S.4.12** Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.
29	Maps Are Models	**S.4.13** Analyze and interpret data from maps to describe patterns of Earth's geological features.
30	Volcanoes	
(31)	***(Engineering Design: Natural Disasters)***	***(Used in 5th Grade: S.5.12)*** *Generate and compare multiple solutions to reduce the impacts of natural Earth processes on the human population.* S.4.15
(32)	***(Stopping the Impact!)***	

Week	Title	Standards Covered
	Introduction to Science	
1	Metric System and Measurement	Nature of Science
2	Crosscutting Concepts	Crosscutting Concepts
3	Engineering Design Process	Science and Engineering S.5.15, S.5.16, S.5.17
	Structure and Properties of Matter	
4	What Is Matter?	**S.5.2** Develop a model to describe that matter is made of particles too small to be seen.
5	States of Matter	**S.5.3** 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 matter is conserved.
6	Law of Conservation of Mass	
7	Properties of Matter: Part One	**S.5.1** Make observations and measurements to identify materials based on their properties.
8	Properties of Matter: Part Two	
9	Engineering Design: Fixing Potholes	**S.5.4** Conduct an investigation to determine whether the mixing of two or more substances results in new substances. S.5.15, S.5.16, S.5.17
	Matter and Energy in Organisms and Ecosystems	
10	Matter Flow in Ecosystems	**S.5.6** Use models to describe that energy in animals' food (used for body repair, growth, motion, and maintenance of body warmth) originated as energy from the sun.
11	Photosynthesis	**S.5.5** Support an argument that plants get the materials they need for growth chiefly from air and water.
12	Plants	
13	Invasive Species	**S.5.7** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
14	The Carbon Connection	
	Earth's Systems	
15	Hydrosphere	**S.5.10** Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. S.5.15, S.5.16, S.5.17
16	Geosphere	
17	Atmosphere	
18	Biosphere	
19	Engineering Design: Building Dams	
20	Types of Water	**S.5.8** Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.
21	The Role of Water	

Week	Title	Standards Covered
22	Engineering Design: Oil Spill	**S.5.9** Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. **S.5.9** Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. S.5.15, S.5.16, S.5.17
23	Protecting the Earth	
24	Engineering Design: Landfills	
13,14	***From 4th Grade***	***S.5.11****: Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.*
31,32	***From 4th Grade***	***S.5.12****: Generate and compare multiple solutions to reduce the impacts of natural Earth processes on the human population*
Space Systems: Stars and the Solar System		
(25)	***(What Is Gravity?)***	***(Used in 3rd Grade S.3.5)*** *Support an argument that the gravitational force exerted by Earth on objects is directed down.* S.5.15, S.5.16, S.5.17
(26)	***(Gravity in Space)***	
(27)	***(Engineering Design: Mission to Mars)***	
28	What Is a Star?	**S.5.13** Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.
29	Shadows	**S.5.14** Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.
30	The Earth	
31	The Moon	
32	The Seasons	