Pine Hill Public Schools Curriculum			
Content Area:	**Science**		
Course Title/ Grade Level: Fourth Grade	Grade 4		
Unit 1:	Energy	Duration:	5 weeks
Unit 2:	Waves: Waves and Information	Duration::	5 weeks
Unit 3:	Structures, Functions and Information Processing	Duration:	5 weeks
Unit 4:	Earth's Systems: Processes that Shape the Earth	Duration:	5 weeks
BOE Approved Revision:			
BOE Initial Adoption Date:	August 15, 2017		

Pine Hill Public Schools Curriculum		
Unit Title Energy		**Unit #: 1**
Course or Grade Level: Fourth	**Length of Time: 5 weeks**	
Performance Expectations	4-PS3-1. Use evidence to construct an explanation relating the speed of an object to the energy of that object. 4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. 4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide. 4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.*	
Content	• Potential and Kinetic Energy • Energy cannot be created or destroyed • Energy is transferred from one form to another via collision, light, heat, or sound • The relationship between speed and energy • Natural, renewable and non-renewable Energy Resources • Transfer of energy through light absorption, • Electrical circuits	
Assessments	• Formative: Anecdotal Records; Teacher Observation; Independent Practice; Investigations; Student Journals • Summative: Unit Tests; Performance Tasks	
Inter-disciplinary Connections	ELA/Literacy - • RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. (4-PS3-1) • RI.4.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. (4-PS3-1) • RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. (4-PS3-1) • W.4.2Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (4-PS3-1) • W.4.7Conduct short research projects that build knowledge through investigation of different aspects of a topic. (4-PS3-2),(4-PS3-3),(4-PS3-4) • W.4.8Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources. (4-PS3-1),(4-PS3-2),(4-PS3-3),(4-PS3-4) • W.4.9Draw evidence from literary or informational texts to support analysis, reflection, and research. (4-PS3-1) Mathematics • 4.OA.A.3Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (4-PS3-4)	
Lesson resources / Activities	• Front Row • Internet Resources • Classroom Library • Google Drive • Science A to Z • Science textbook: Macmillan McGraw-Hill	
New Jersey Student Learning Standards for Science		
Science and Engineering Practices: • **Asking Questions and Defining Problems.** • **Planning and Carrying Out Investigations.**	**Disciplinary Core Ideas:** • **PS3.A: Definitions of Energy.** • **PS3.B: Conservation of Energy and Energy Transfer.**	

• **Constructing Explanations and Designing Solutions.** • **Obtaining, Evaluating, and Communicating Information.**	• **PS3.C: Relationship Between Energy and Forces.** • **PS3.D: Energy in Chemical Processes and Everyday Life.** • **ESS3.A: Natural Resources.** • **ETS1.A: Defining Engineering Problems.**

Cross-Cutting Concepts:

- **Cause and Effect.**
- **Energy and Matter.**

Connections to Engineering, Technology, and Applications of Science

- **Interdependence of Science, Engineering, and Technology.**
- **Influence of Engineering, Technology, and Science on Society and the Natural World.**

Connections to Nature of Science

- **Science is a Human Endeavor.**

21st Century Themes

X	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy

21st Century Skills

X	Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration	X	Information Literacy
X	Media Literacy	X	ICT Literacy	X	Life and Career Skills		

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Strand: A. Technology Operations and Concepts: *Students demonstrate a sound understanding of technology concepts, systems and operations.*	**Content Statement:** Understand and use technology systems.	**Indicator:** 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

Pine Hill Public Schools Curriculum	
Unit Title Waves: Waves and Information	**Unit #: 2**
Course or Grade Level: Fourth	**Length of Time: 5 weeks**
Performance Expectations	4-PS4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. 4-PS4-3. Generate and compare multiple solutions that use patterns to transfer information.*
Content	● Wavelength and Amplitude ● Identify the properties of waves ● Relationship between Energy and Amplitude & Frequency and Wavelength ● Waves and Vibration and Sound
Assessments	● Formative: Anecdotal Records; Teacher Observation; Independent Practice; Investigations; Student Journals ● Summative: Unit Tests; Performance Tasks
Inter-disciplinary Connections	ELA/Literacy - ● RI.4.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (4-PS4-3) ● RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. (4-PS4-3) ● SL.4.5Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes. (4-PS4-1),(4-PS4-2) Mathematics - ● MP.4 Model with mathematics. (4-PS4-1),(4-PS4-2) ● 4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. (4-PS4-1),(4-PS4-2)
Lesson resources / Activities	● Front Row ● Internet Resources ● Classroom Library ● Google Drive ● Science A to Z ● Science textbook: Macmillan McGraw-Hill

New Jersey Student Learning Standards for Science

Science and Engineering Practices:	**Disciplinary Core Ideas:**
● **Developing and Using Models.** ● **Constructing Explanations and Designing Solutions.** **Connections to Nature of Science** ● **Scientific Knowledge is Based on Empirical Evidence.**	● **PS4.A: Wave Properties.** ● **PS4.C: Information Technologies and Instrumentation.** ● **ETS1.C: Optimizing the Design Solution.**

Cross-Cutting Concepts:
- **Patterns**

Connections to Engineering, Technology, and Applications of Science
- **Interdependence of Science, Engineering, and Technology.**

21st Century Themes

X	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy

21st Century Skills							
X	Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration	X	Information Literacy
X	Media Literacy	X	ICT Literacy	X	Life and Career Skills		

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.		
Strand: A. Technology Operations and Concepts: *Students demonstrate a sound understanding of technology concepts, systems and operations.*	**Content Statement:** Understand and use technology systems.	**Indicator:** 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

Pine Hill Public Schools Curriculum	
Unit Title Structures, Functions, and Information Processing	**Unit #: 3**
Course or Grade Level: Fourth Grade	**Length of Time: 5 weeks**
Performance Expectatio.ns	4-PS4-2. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen 4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. 4-LS1-2. 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.
Content	● Internal and external structures of plants and animals and their functions ● Adaptations for survival ● Human Senses and Processing ● Stimulus and Response - learned vs instinct ● Structure of the human eye ● Light interaction with objects
Assessments	● Formative: Anecdotal Records; Teacher Observation; Independent Practice; Investigations; Student Journals ● Summative: Unit Tests; Performance Tasks
Inter-disciplinary Connections	ELA/Literacy - ● W.4.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (4-LS1-1) ● SL.4.5 Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes. (4-LS1-2) Mathematics - ● 4.G.A.3 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded across the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. (4-LS1-1) ●
Lesson resources / Activities	● Front Row ● Internet Resources ● Classroom Library ● Google Drive ● Science A to Z ● Science textbook: Macmillan McGraw-Hill

New Jersey Student Learning Standards for Science

Science and Engineering Practices:	**Disciplinary Core Ideas:**
● **Developing and Using Models.** ● **Engaging in Argument from Evidence.**	● **PS.B: Electromagnetic Radiation.** ● **LS1.A: Structure and Function.** ● **LS1.D: Information Processing**

Cross-Cutting Concepts:
- **Cause and Effect.**
- **Systems and System Models.**

21st Century Themes

X	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy	X	Health Literacy

21st Century Skills

X	Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration	X	Information Literacy
X	Media Literacy	X	ICT Literacy	X	Life and Career Skills		

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.		
Strand: A. Technology Operations and Concepts: *Students demonstrate a sound understanding of technology concepts, systems and operations.*	**Content Statement:** Understand and use technology systems.	**Indicator:** 8.1.5.A.1 Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

Pine Hill Public Schools Curriculum	
Unit Title Earth's Systems: Processes that Shape the Earth	**Unit #: 4**
Course or Grade Level: Fourth	**Length of Time: 5 weeks**
Performance Expectations	4-ESS1-1. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. 4-ESS2-1. 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-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features. 4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans. 4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.
Content	● Creation of Fossils ● Fossils as evidence in history ● Weathering, Erosion, transportation and Deposition ● Plate tectonics and boundary zones ● Natural Processes and their patterns ● Natural disasters, hazards and solutions
Assessments	● Formative: Anecdotal Records; Teacher Observation; Independent Practice; Investigations; Student Journals ● Summative: Unit Tests; Performance Tasks
Inter-disciplinary Connections	ELA/Literacy ● RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. (4-ESS3-2) ● RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. (4-ESS3-2) ● RI.4.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears. (4-ESS2-2) ● W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic. (4-ESS1-1) ● W.4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources. (4-ESS1-1) ● W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research. (4-ESS1-1) Mathematics - ● MP.2 Reason abstractly and quantitatively. (4-ESS2-1) ● MP.4 Model with mathematics. (4-ESS2-1) ● MP.5 Use appropriate tools strategically. (4-ESS2-1) ● 4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. (4-ESS2-1) ● 4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. (4-ESS2-1),(4-ESS2-2)
Lesson resources / Activities	● Front Row ● Internet Resources ● Classroom Library ● Google Drive

	• Science A to Z • Science textbook: Macmillan McGraw-Hill

New Jersey Student Learning Standards for Science

Science and Engineering Practices:	**Disciplinary Core Ideas:**
• **Planning and Carrying Out Investigations.** • **Analyzing and Interpreting Data.** • **Constructing Explanations and Designing Solutions.**	• **ESS1.C: The History of Planet Earth.** • **ESS2.A: Earth Materials and Systems.** • **ESS2.B: Plate Tectonics and Large-Scale System Interactions.** • **ESS2.E: Biogeology.** • **ESS3.B Natural Hazards.** • **ETS1.B: Designing Solutions to Engineering Problems.**

Cross-Cutting Concepts:
- **Patterns**
- **Cause and Effect.**

Connections to Engineering, Technology, and Applications of Science.
- **Influence of Engineering, Technology, and Science on Society and the Natural World.**

Connections to Nature of Science
- **Scientific Knowledge Assumes an Order and Consistency in Natural Systems.**

21st Century Themes

X	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy	X	Civic Literacy		Health Literacy

21st Century Skills

X	Creativity and Innovation	X	Critical Thinking and Problem Solving	X	Communication and Collaboration	X	Information Literacy
X	Media Literacy	X	ICT Literacy	X	Life and Career Skills		

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