Randolph County School System 6-8 Curriculum Pacing

6th Science At a Glance

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Intro/Getting to know students/Scientific Method 2 Weeks **6.E.1 Solar System - 5 Weeks** *(6.E.1.1, 6.E.1.2, and 6.E.1.3)* **6.E.2 Lithosphere – 2 Weeks** *(6.E.2.1 and 6.E.2.2 only)* *(the rest of 6.E.2 will roll over into 2nd quarter)*	**6.E.2 Lithosphere – 2 Weeks** *(6.E.2.3 and 6.E.2.4 only)* **6.L.1 Plants – 3 Weeks** *(6.L.1.1 and 6.L.1.2)* **6.L.2 Ecosystems – 4 Weeks** *(6.L.2.1 and 6.L.2.2 only)* *(the rest of 6.L.2 will roll over into 3rd quarter)*	**6.L.2 Ecosystems – 3 Weeks** *(6.L.2.3 only)* **6.P.1 Light/Sound – 4 Weeks** *(6.P.1.1, 6.P.1.2, and 6.P.1.3)* **6.P.2 Matter – 2 Weeks** *(6.P.2.1 only)* *(roll over into 4th quarter)*	**6.P.2 Matter – 2 Weeks** *(6.P.2.2 and 6.P.2.3 only)* **6.P.3 Energy Transfer – 4 Weeks** *(6.P.3.1, 6.P.3.2, and 6.P.3.3)* **Review and Testing – 3 Weeks**

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6th Science 1st Quarter Pacing

Intro, Getting to know Students, and Review of Scientific Method (2 Weeks)

- I can identify the steps of the scientific method.
- I can form a hypothesis based on prior knowledge.
- I can analyze data from an experiment.
- I can identify the control, independent, and dependent variables in an experiment.
- I can conduct a scientific experiment.
- I can measure using metric units.

Vocabulary – Scientific Method, Hypothesis, Observation, Inference, Predict, Independent Variable, Dependent Variable, Constant, Control, Procedures, Analysis, Conclusion, Mass, Volume, Metric System.

New Standards to be Taught:

6.E.1 (5 Weeks) - Understand the earth/moon/sun system, and the properties, structures and predictable motions of celestial bodies in the Universe.

- *6.E.1.1 Explain how the relative motion and relative position of the sun, Earth and moon affect the seasons, tides, phases of the moon, and eclipses.*
- *6.E.1.2 Explain why Earth sustains life while other planets do not based on their properties (including types of surface, atmosphere and gravitational force) and location to the Sun.*
- *6.E.1.3 Summarize space exploration and the understandings gained from them.*

6.E.2 (2 Weeks-*6.E.2.1 and 6.E.2.2 only*) - Understand the structure of the earth and how interactions of constructive and destructive forces have resulted in changes in the surface of the Earth over time and the effects of the lithosphere on humans

- *6.E.2.1 Summarize the structure of the earth, including the layers, the mantle and core based on the relative position, composition, and density.*
- *6.E.2.2 Explain how crustal plates and ocean basins are formed, move and interact using earthquakes, heat flow, and volcanoes to reflect forces within the earth.*

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Learning Targets

- *I can describe the relative motion and relative position of the sun, Earth, and moon affect the seasons, tides, phases of the moon, and eclipses.*
- *I can compare and contrast the Earth's revolution and rotation and their effects.*
- *I can explain the effect of the gravitational forces between the Earth, moon, and sun.*
- *I can explain what causes seasons, tides, and eclipses.*
- *I can demonstrate the Moon's revolution through the moon phases.*
- *I can explain why Earth sustains life while other planets do not based on their properties (including types of surface, atmosphere, and gravitational force).*
- *I can compare and contrast Earth's characteristics to the characteristics of other planets.*
- *I can identify the objects that make up the Solar System.*
- *I can explain why the sun is important to our Solar System.*
- *I can describe why space exploration is important and what understandings have been gained from them.*
- *I can identify telescopes and observatories that have been used to explore space.*
- *I can identify products that have been developed for use in the space program.*
- *I can explain the benefits of space exploration.*
- *I can discuss problems humans encountered in exploring space.*
- *I can determine where Earth is in the universe.*
- *I can identify "spin-offs" of space exploration.*
- *I can describe the structure of Earth, including the layers, the mantle, and core based on the relative position, composition, and density.*
- *I can draw a model of Earth's layers and explain the characteristics of each.*
- *I can explain how crustal plates move.*
- *I can explain the characteristics of primary waves, secondary waves, and surface waves.*
- *I can explain how the Ring of Fire relates to major geological events such as mountains, earthquakes, and volcanoes.*
- *I can describe how crustal plates and ocean basins formed.*
- *I can summarize how crustal plates and ocean basins move and interact using earthquakes, heat flow, and volcanoes to reflect forces within the Earth.*

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Key Vocabulary				
6.E.1.1	**6.E.1.2**	**6.E.1.3**	**6.E.2.1**	**6.E.2.2**
Rotation Revolution Ellipse Solstice Equinox Season Gravitational Force Tides Lunar Eclipse Solar Eclipse	Atmosphere Natural Satellite Artificial Satellite Asteroid Meteors Comets Solar System Galaxy	Telescope Probes Rocket Space Shuttle International Space Station Chandra X-Ray Observatory Compton Gamma Ray Observatory Hubble Telescope Fermi-Gamma-Ray Telescope Spitizer Space Telescope	Plate Tectonics Pangaea Plate Boundaries Lithosphere Subduction Rift Fault	Magnitude Seismic Waves Epicenter Primary Waves Secondary Waves

Key Concepts and Skills	Resources
Earth Moon Sun Solar System Space Exploration Seismic Waves Plate Tectonics	• See Randolph County Schools website for resource list

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6th Science 2nd Quarter Pacing

New Standards to be Taught:

6.E.2 (2 Weeks-*6.E.2.3 and 6.E.2.4 only*) - Understand the structure of the earth and how interactions of constructive and destructive forces have resulted in changes in the surface of the Earth over time and the effects of the lithosphere on humans

- *6.E.2.3 Explain how the formation of soil is related to the parent rock type and the environment in which it develops.*
- *6.E.2.4 Conclude that the good health of humans requires: monitoring the lithosphere, maintaining soil quality and stewardship*

6.L.1 (3 Weeks-*6.L.1.1 and 6.L.1.2*) – Understand the structures, processes and behaviors of plants that enable them to survive and reproduce.

- *6.L.1.1 Summarize the basic structures and functions of flowering plants required for survival, reproduction, and defense.*
- *6.L.1.2 Explain the significance of the processes of photosynthesis, respiration, and transpiration to the survival of green plants and other organisms.*

6.L.2 (4 Weeks – 6.L.2.1 and 6.L.2.2)- Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environment.

- *6.L.2.1 Summarize how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within food chains and food webs (terrestrial and aquatic) from producers to consumers to decomposers.*
- *6.L.2.2 Explain how plants respond to external stimuli (including dormancy and forms of tropism) to enhance survival in an environment.*

Randolph County School System 6-8 Curriculum Pacing

Learning Targets

- *I can identify the 3 types of rocks and show how they change from one type of another.*
- *I can create a diagram of the rock cycle.*
- *I can describe how soil is formed.*
- *I can create a diagram of a soil profile and label each horizon and its content.*
- *I can draw conclusions about the properties of soil and how it affects soil: texture, particle size, pH, fertility, ability to hold moisture*
- *I can describe mechanical and chemical weathering.*
- *I can describe the sources of soil.*
- *I can explain how different properties of soil effect plant growth.*
- *I can describe how various climates affect soil.*
- *I can describe three important benefits of soil.*
- *I can describe four methods of preventing soil damage and loss.*
- I can explain how human activities affect the pedosphere.
- I can identify how technology such as remote sensing is used to protect soil.
- I can explain methods used by humans to conserve soil.
- I can describe the function of each flowering plant part
- I can draw and/or label the basic structures of a flowering plant diagram.
- I can explain the process of how a flowering plant reproduces.
- I can summarize how the basic structures and functions of flowering plants allows for survival and defense.
- I can compare and contrast photosynthesis and cellular respiration.
- I can trace the flow of energy in a food chain: sun, producers, consumers, and decomposers.
- I can develop an energy pyramid that shows how the amount of energy changes on each level.
- I can identify how water, nitrogen, carbon dioxide, and oxygen are recycled in the environment.
- I can describe the process of transpiration.
- I can explain the different ways that plants respond to external stimuli such as: gravity, sunlight, temperature, and day length through dormancy and tropism.
- I can determine the difference between positive and negative tropism.

Randolph County School System 6-8 Curriculum Pacing

Key Vocabulary					
6.E.2.3	**6.E.2.4**	**6.L.1.1**	**6.L.1.2**	**6.L.2.1**	**6.L.2.2**
Igneous Rock Sedimentary Rock Metamorphic Rock Rock Cycle Soil Horizon Humus Crystals Minerals Weathering Erosion	Pedosphere Stewardship Contour Farming Vegetative Cover Conservation Plowing Conservation Agriculture	Cuticle Petals Sepals Stamens Anther Pistil Ovary Fertilization Reproduction Pollination	Epidermis Stomata Guard Cell Glucose Photosynthesis Respiration	Producers Consumers Decomposers Food Chain Energy Pyramid Ecosystem Water Cycle Nitrogen Cycle Carbon Cycle	Transpiration Chlorophyll Dormancy Tropism Stimulus
Key Concepts and Skills Soil Formation Rock Cycle Conservation Structure of Flowering Plants Function of Flowering Plants Plant Processes			**Resources** • See Randolph County Schools website for resource list		

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6th Science 3rd Quarter Pacing

New Standards to be Taught:

6.L.2 (3 Weeks-*6.L.2.3 only*) - Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environment.

- *6.L.2.3 Summarize how the abiotic factors (such as temperature, water, sunlight, and soil quality) of biomes (freshwater, marine, forest, grasslands, desert, Tundra) affect the ability of organisms to grow, survive and /or create their own food through photosynthesis.*

6.P.1 (4 Weeks-*6.P.1.1, 6.P.1.2, and 6.P.1.3*) – Understand the properties of waves and the wavelike property of energy in earthquakes, light, and sound waves.

- *6.P.1.1 Compare the properties of waves to the wavelike property of energy in earthquakes, light, and sound.*
- *6.P.1.2 Explain the relationship among visible light, the electromagnetic spectrum, and sight.*
- *6.P.1.3 Explain the relationship among the rate of vibration, the medium through which vibrations travel, sound, and hearing.*

6.P.2 (4 Weeks-*6.P.2.1 only*) Understand the structure, classifications and physical properties of matter.

- *6.P.2.1 Recognize that all matter is made up of atoms and atoms of the same element are all alike, but are different from the atoms of other elements.*

Learning Targets

- *I can classify biotic and abiotic factors.*
- *I can create a model to show the abiotic and biotic factors found in different biomes.*
- *I can explain how the limiting factors in any biome can affect the growth and survival of an organism.*
- *I can examine an ecosystem and identify its limiting factors.*
- *I can understand how organisms are able to tolerate fluctuations of abiotic and biotic factors.*
- *I can describe how a wave is created.*
- *I can explain a wave as moving energy.*
- *I can relate wave behavior to wave length.*
- *I can illustrate and label the basic characteristics of a transverse wave.*
- *I can illustrate and label the basic characteristics of a longitudinal wave.*
- *I can explain what causes earthquakes.*
- *I can compare light waves, sound waves, and seismic waves.*

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- *I can investigate how the eye works (structures and functions) and conditions that impair the eye.*
- *I can understand sight occurs when light waves, emitted or reflected, enter the eye.*
- *I can define sound.*
- *I can explain the relationship between frequency/pitch and amplitude/loudness.*
- *I can investigate how the ear hears (structures and functions).*
- *I can compare how sound travels through different states of matter.*
- *I can discuss how vocal chords produce sounds and the conditions that affect sound they make.*
- *I can recognize that matter is made of smaller particles called atoms.*
- *I can explain why atoms are the building blocks of all matter.*
- *I can recognize that all atoms of the same element have the same properties.*
- *I can define an element.*

Key Vocabulary

6.L.2.3	6.P.1.1	6.P.1.2	6.P.1.3	6.P.2.1
Biome	Wave	Cornea	Pitch	Atom
Population	Amplitude Frequency	Pupil	Loudness	Matter
Community	Wavelength	Retina	Outer Ear	Mass
Organisms	Transverse Waves	Optical Nerve	Ear Canal	Element
Limiting Factor	Longitudinal Waves	Iris	Middle Ear	Proton
Predator	Compression	Lens	Ossicles	Neutron
Adaptations	Refraction		Eardrum	Electron
Biotic	Seismic Waves		Inner Ear	
Abiotic	Earthquakes		Cochlea	

Key Concepts and Skills

Biomes
Flow of Energy through Ecosystems
Properties of Waves
Light Waves
Sound Waves
Atoms

Resources

- See Randolph County Schools website for resource list

Randolph County School System 6-8 Curriculum Pacing

6th Science 4th Quarter Pacing

New Standards to be Taught:

6.P.2 (2 Weeks-*6.P.2.2 and 6.P.2.3 only*) Understand the structure, classifications and physical properties of matter.

- *6.P.2.2 Explain the effect of heat on the motion of atoms through a description of what happens to particles during a change in phase.*
- *6.P.2.3 Compare the physical properties of pure substances that are independent of the amount of matter present including density, melting point, boiling point, and solubility to properties that are dependent on the amount of matter present to include volume, mass, and weight.*

6.P.3 (4 Weeks-*6.P.3.1, 6.P.3.2, and 6.P.3.3*) – Understand characteristics of energy transfer and interactions of matter and energy.

- *6.P.3.1 Illustrate the transfer of heat energy from warmer objects to cooler ones using examples of conduction, radiation, and convection and the effects that may result.*
- *6.P.3.2 Explain the effects of electromagnetic waves on various materials to include absorption, scattering, and change in temperature.*
- *6.P.3.3 Explain the suitability of materials for use in technological design based on a response to heat (to include conduction, expansion, and contraction) and electrical energy (conductors and insulators).*

Review and Testing (3 Weeks)

Learning Targets

- *I can I can identify the three phases of matter.*
- *I can describe the characteristics of a solid, a liquid, and a gas.*
- *I can compare/contrast the three phases of matter pertaining to their characteristics.*
- *I can observe how increase in temperature results in a phase changes of solids, liquids, and gases.*
- *I can interpret a phase change diagram.*
- *I can understand matter can undergo physical changes.*
- *I can discuss how melting point, boiling point, density, and solubility can affect physical properties.*

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- *I can define thermal energy.*
- *I can determine the different methods energy is transferred from one system to another- thermally, mechanically, electrically, electromagnetic waves*
- *I can explain how thermal energy is transferred from one object to another through conduction, convection, and radiation.*
- *I can, given a scenario, determine how heat is being transferred.*
- *I can compare/contrast and give examples of thermal conductors and insulators.*
- *I can compare/contrast and give examples of electrical conductors and insulators.*
- *I can recognize that electromagnetic waves can warm objects.*
- *I can explain that an increase in an object's temperature depends on: light intensity, length of time, amount of light absorption.*
- *I can explain when light interacts with matter it is: absorbed, transmitted, refracted, reflected (scattered).*
- *I can compare the characteristics of visible electromagnetic waves, infrared electromagnetic waves, and ultraviolet electromagnetic waves.*

Key Vocabulary

6.P.2.2	6.P.2.3	6.P.3.1	6.P.3.2	6.P.3.3
Solid Liquid Gas	Solubility Density Volume Melting Point Boiling Point	Energy Kinetic Energy Potential Energy Thermal Energy Radiation Convection Conduction Convection Radiation	Electromagnetic Waves Reflection Refraction Wavelength Electromagnetic Radiation Electromagnetic Spectrum Infrared Ultraviolet Ozone Visible Spectrum	Conductor Insulator

Key Concepts and Skills

Changes in Matter
Thermal Energy
Electromagnetic Energy

Resources

- See Randolph County Schools website for resource list