Dear Earth/Environmental Science Teacher:

Congratulations on your Earth/Environmental Science course assignment. The Halifax County Schools Earth/Environmental Science Pacing Guide engages students in inquiry-based instruction. *Standards are paced in nine weeks within two quarters.* ***Numbers*** *indicate which quarter each standard is to be taught." **X"** indicates quarter NOT taught. You will need to cluster standards into units of study.* Implementation of a seamless integration of science content, scientific inquiry, experimentation and technological design will reinforce in students the notion that "what" is known is inextricably tied to "how" it is known. Developing conceptual understanding of science content is essential; therefore, data-driven remediation of standards should take place prior to benchmarks. A well-planned science unit provides opportunities for inquiry, experimentation and use of technological enhancements. When teaching, provide opportunities for students to engage in "hands-on/minds-on" activities that unwrap the knowledge, understanding, and application of concepts.

Things to Remember:

- Engaging students in inquiry-based instruction is a critical way of developing conceptual understanding of the science content
- The process of scientific inquiry, experimentation and technological design should not be taught nor tested in isolation of the core concepts drawn from physical science, earth science and life science. A seamless integration of science content, scientific inquiry, experimentation and technological design will reinforce in students the notion that "what" is known is inextricably tied to "how" it is known.
- A well-planned science curriculum provides opportunities for inquiry, experimentation and technological design.
- Science, should provide opportunities for students to engage in "hands-on/minds-on" activities that are exemplars of scientific inquiry, experimentation and technological design.
- Science as Inquiry Traditional laboratory experiences provide opportunities to demonstrate how science is constant, historic, probabilistic, and replicable
- Student engagement in scientific investigation provides background for understanding the nature of scientific inquiry. In addition, the science process skills necessary for inquiry are acquired through active experience.
- The process skills support development of reasoning and problem-solving ability and are the core of scientific methodologies.
- Engage first-hand exploration & investigation and inquiry/processing skills are nurtured.
- Instruction builds directly on student' conceptual background. science content is organized on the basis of broad conceptual themes common to all science disciplines.
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- Mathematics and communication skills are an integral part of science instruction.
- Learning environment fosters positive attitudes towards self and society, as well as science.

Alignment of Instructional Model: (I Do; We Do; You Do)

1. **I Do: Engage** Teacher introduces concept and connect to students' prior knowledge; acknowledges accuracy of understanding and any misconceptions.
2. **We Do: Explore** Students are provided collaborative opportunities for observations and questioning prior to teacher's explanation of concepts, functions, systems, and processes.
3. **I Do: Explain/Elaborate** Teacher provides a clear, concise description of new concepts & reasoning; includes anchor charts, video clips, visuals and *models* of functions, systems, and processes.
4. **We Do: Elaborate** Guided Practice with feedback
5. **You Do: Evaluate** Determine students' understanding of Biology standards through tasks, projects & assessments.

Charting a New Course!
Halifax County Schools
2019-2020 Curriculum & Instruction Support Team

Halifax County Schools: Physical Science Essential Standards Pacing Guide (Revised July 31, 2019

Semester Course	Quarters 1st 9 Weeks	2nd 9 Weeks
Forces and Motion		
PSc.1.1 Understand motion in terms of speed, velocity, acceleration and momentum.	**P**	**P**
PSc.1.1.1 Explain motion in terms of frame of reference, distance, and displacement.	1	X
PSc.1.1.2 Compare speed, velocity, acceleration and momentum using investigations, graphing, scalar quantities and vector quantities	X	2
Psc.1.2 Understand the relationship between forces and motion.	**P**	**P**
PSc.1.2.1 Explain how gravitational force affects the weight of an object and the velocity of an object in freefall.	1	2
PSc.1.2.2 Classify frictional forces into one of four types: static, sliding, rolling, and fluid.	1	X
PSc.1.2.3 Explain forces using Newton's three laws of motion.	1	X
	Quarters	
Matter: Properties and Change		
PSc.2.1 Understand types, properties, **and structure of matter.**	**P**	**P**
PSc.2.1.1 Classify matter as: homogeneous or heterogeneous; pure substance or mixture; element or compound; metals, nonmetals or metalloids; solution, colloid or suspension.	1	X
PSc.2.1.2 Explain the phases of matter and the physical changes that matter undergoes.	1	X
PSc.2.1.3 Compare physical and chemical properties of various types of matter.	1	2
PSc.2.1.4 Interpret data presented in Bohr model diagrams and dot diagrams for atoms and ions of elements 1 through 18.	1	X
PSc.2.2 Understand chemical bonding and chemical interactions.	**P**	**P**
PSc.2.2.1 Infer valence electrons, oxidation number, and reactivity of an element based on its location in the Periodic Table.	1	X
PSc.2.2.2 Infer the type of chemical bond that occurs, whether covalent, ionic or metallic, in a given substance.	X	2
PSc.2.2.3 Predict chemical formulas and names for simple compounds based on knowledge of bond formation and naming conventions.	X	2
PSc.2.2.4 Exemplify the law of conservation of mass by balancing chemical equations.	1	2
PSc.2.2.5 Classify types of reactions such as synthesis, decomposition, single replacement or double replacement.	1	X
PSc.2.2.6 Summarize the characteristics and interactions of acids and bases.	1	X
PSc.2.3 Understand the role of the nucleus in radiation and radioactivity.	**P**	**P**
PSc.2.3.1 Compare nuclear reactions including alpha decay, beta decay and gamma decay; nuclear fusion and nuclear fission.	X	2
PSc.2.3.2 Exemplify the radioactive decay of unstable nuclei using the concept of half-life.	1	X

Energy: Conservation and Transfer		
PSc.3.1 Understand the types of energy, conservation of energy and energy transfer.	**P**	**P**
PSc.3.1.1 Explain thermal energy and its transfer.	1	X
PSc.3.1.2 Explain the law of conservation of energy in a mechanical system in terms of kinetic energy, potential energy and heat.	1	X
PSc.3.1.3 Explain work in terms of the relationship among the applied force to an object, the resulting displacement of the object and the energy transferred to an object.	X	2
PSc.3.1.4 Explain the relationship among work, power and simple machines both qualitatively and quantitatively.	1	X
PSc.3.2 Understand the nature of waves	P	P
PSc.3.2.1 Explain the relationships among wave frequency, wave period, wave velocity and wavelength through calculation and investigation.	1	X
PSc.3.2.2 Compare waves (mechanical, electromagnetic, and surface) using their characteristics.	1	X
PSc.3.2.3 Classify waves as transverse or compressional (longitudinal).	1	X
PSc.3.2.4 Illustrate the wave interactions of reflection, refraction, diffraction, and interference.	X	2
PSc.3.3 Understand electricity and magnetism and their relationship.	P	P
PSc.3.3.1 Summarize static and current electricity.	1	X
PSc.3.3.2 Explain simple series and parallel DC circuits in terms of Ohm's law.	1	X
PSc.3.3.3 Explain how current is affected by changes in composition, length, temperature, and diameter of wire.	X	2
PSc.3.3.4 Explain magnetism in terms of domains, interactions of poles, and magnetic fields.	X	2
PSc.3.3.5 Explain the practical applications of magnetism.	1	X