Pacing Guide Unit One

Unit/Focus: Structure of Matter	*Time Frame: 6 weeks*
Standards: 6. P.2 Understand the structure, classifications, and physical properties. 6. P.3 Understand characteristics of energy transfer and interactions of matter and energy. **Objectives:** 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. 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 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.3.3 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). **Literacy Standards:** 3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical	**Essential Questions:** How do we know what parts make up the atom? How does heat affect the motion of atoms? What is matter? What is an element? How do states of matter change? What are physical and chemical proerties of matter? What is the difference between mass and weight? How can you determine the density of an object? How can I tell if a substance is pure? What is energy? How is temperature related to kinetic energy? What is the relationship between heat and temperature? How does the use of energy resources affect the environment?

tasks

Technology Standards:

6. TT.1: Use technology and other resources for the purpose of accessing, organizing, and sharing information.

- 6. TT.1.2 Select appropriate technology tools to organize data and information (e.g., word processor, database, spreadsheet, graphic organizer, audio, and visual recording, online collaboration tools, etc.).
- 6. TT.1.3 Select appropriate technology tools to present data and information effectively (multimedia, audio and visual recording, online collaboration tools, etc.).

6.SE.1 Apply responsible behaviors when using information and technology resources

- 6. SE.1.1 Apply ethical behavior (copyright, not plagiarizing, proper etiquette) when using resources.
- 6. SE.1.2 Apply the safety precautions necessary when using online resources (personal information, passwords, etc.).

Vocabulary:

Atoms
Elements
Heat
Motion
Particles
Solid
Melting Point
Solubility
Mass
Weight
Matter

Suggested Resources:

- NC DPI Support Document (8th grade)
  Atom animation
  Deep Thoughts on Matter
- Atoms
- Tasty Solutions Lab
- Changes of Matter

Liquid Gas Thermal energy Volume Density Technological design Insulator Conduction Expansion Contraction Collision Convection Transfer Transform Radiation Pure Substance Freezing point Boiling point	▪ What is the matter? Lab ▪ Cycle of matter ▪ Using Static Electricity to Introduce matter ▪ Using Static Electricity to Introduce matter ▪ Currituck County Schools **Scientific Literature** ***Science Fusion Teachers Edition- Matter and Energy-*** pg 200-213, pg 34- 118, pg 130-185 *Matter* by Chris Cooper *The Solid Truth About States of Matter with Max Axiom* by Agnieszka Biskup *WildSide: Weird Science Book* Textbook Reference (8th grade textbook) Energy -Book 6th Grade McDougal Book - Unit B- Chapter 1, Chapter 2 Video Atoms Video
Assessment Tasks: Labs, quizzes, formal assessments, group activities, foldables	

Pacing Guide Unit 2

Unit/Focus: Earth Explorations	**Time Frame: 12 weeks**
Standards: 6. E.2 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. P.1 Understand the properties of waves and the wavelike property of energy in earthquakes, light and sound. **Objectives:** 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. 6E2.2 Explain how crustal plates and ocean basins are formed, move and interact using earthquakes, heat flow and volcanoes to reflect forces within the earth. 6. E2.3 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. P.1.1 Compare the properties of waves to the wavelike property of energy in earthquakes, light, and sound. **Technology Standards:**	**Essential Questions:** How do mountains and volcanoes form? How do matter and energy move through Earth's spheres? How does weathering change Earth's surface? How does water change Earth's surface? How do wind, ice, and gravity change Earth's surface? How does soil form? How do different types of soil form? What causes the Earth’s surface to change? How are rocks formed and how do they change over time? What causes earthquakes?

6. SI.1 Analyze resources to determine their reliability, point of view, bias, and relevance, for particular topics and purposes. • 6.SI.1.3: Analyze resources for point of view, bias, values, or intent of information 6. RP.1 Apply a research process for collaborative or individual research. • 6. RP.1.1 Implement a research process collaboratively. • 6. RP.1.2 Implement a research process independently. **Literacy Standards:** 4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics. 7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flow chart, diagram, model, graph or table).	
Vocabulary: Lithosphere mantle, core crustal plate ocean basin heat flow earthquake volcano soil faulting folding crystallization sediments crystals pedosphere contour plowing conservation plowing	**Suggested Resources:** NC DPI Support Document Energy Lithosphere Smithsonian Rock Lab Rock Cycle with Gum and Pop Rocks Soil Texture Lab

stewardship metamorphic sedimentary igneous continental plates seismologist primary waves secondary waves surface waves frequency wavelength amplitude speed erosion texture debris fertility pH particle size	agriculture vector remote sensing forces moisture	Google Earth Earthquake Windows 2 Universe Video Energy Video 6th Grade McDougal Book- Unit A- Chapters 1-5 Unit B- Chapters 3-5 **Scientific Literature:** ***Science Fusion Teachers Edition- Dynamic Earth-*** pg 14-89, *Rocks and Minerals* by R.F. Symes *Sand and Soil* by Beth Gurney *Plate Tectonics and Continental Drift* by John Edwards *Earthquakes and Volcanoes* by Alison Rae
Assessment Tasks: Group Project on volcanoes, individual project on earthquakes, formal assessment, quizzes, summaries, foldables	

Pacing Guide Unit Three

Unit/Focus: Structure of the Plant	*Time Frame: 4 weeks*
Standards: 6. L.1 Understand the structures, processes and behaviors of plants that enable them to survive and reproduce. **Objectives:** 6. L.1.1 Summarize the basic structures and functions of flowering plants required for survival, reproduction and defense. 6. L.2.2 Explain how plants respond to external stimuli (including dormancy and forms of tropism) to enhance survival in an environment. 6. L.1.2 Explain the significance of the processes of photosynthesis, respiration, and transpiration to the survival of green plants and other organisms. **Literacy Standards:** 5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic. 6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	**Essential Questions/ Bellringers:** How does the structure of the plant aid in its survival? How are flowering plants adapted for sexual reproduction? What are plants? How do plants stay alive? How are flowers pollinated? What might happen if we didn't have pollinators such as bees?

Vocabulary:		**Suggested Resources:**
Cellular respiration	cuticle	NC DPI Support Document
photosynthesis	stomata	Parts of Flower
transpiration	guard cells	Photosynthesis Interactive
tropism	dormancy	Photosynthesis Webquest
adaptation	germination	Demos
stimuli	gravity	Plant Adaptations
producers	leaves	Flower Dissection
consumers	epidermis	
decomposer	chlorophyll	6TH Grade McDougal Book- Unit D- Chapter 1.3
sexual reproduction		
reproduce		
fertilization		
seed production		
pollination		
petals		
stem		
sepals		
stamens		
anther		
pollen sperm		
pistils		
ovary		
fruit		
ovules or ovum		
glucose		
carbon dioxide		
oxygen		

Assessment Tasks:
Quizzes, labs, projects, formal assessment, foldable, science notebook

Pacing Guide Unit Four

Unit/Focus: **Food Webs and Biomes**	**Time Frame: 4 weeks**
Standards: 6. L.2 Understand the flow of energy through ecosystems and the responses of populations to the biotic and abiotic factors in their environment. **Objectives:** 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.2.3 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. **Technology Standards:** 6. TT.1: Use technology and other resources for the purpose of accessing, organizing, and sharing information. 7. 6. TT.1.1 Select appropriate technology tools to gather data and information (e.g., Web-based resources, e-books, online communication tools, etc.).	**Essential Questions:** Explain what you think tropism or dormancy means. Explain dormancy and how it is beneficial to plants. How are organisms dependent upon their environment? How do outside environments effect how organisms grow and survive? What are the components of an estuary? How can human activity affect an estuary? What can happen if an ecosystem has an overgrowth of producers? Why is the ocean considered one the most diverse ecosystem for organisms? Why is the rain forest considered one of the most diverse ecosystem for organisms? Why is a rotting log considered a biotic factor in the environment? How do plants respond to external stimuli? How are fungi helpful and harmful to plants? How does respiration and transpiration effect photosynthesis?

Vocabulary: Populations Ecosystem Biome food web (chain terms) symbiotic relationships predator prey competition bacteria community carrying capacity	Suggested Resources: NC DPI Support Document Internet Ecosystems Franklin Institute Ecosystems Foodchain Game http://teacher.scholastic.com/activities/explorer/ecosystems/be_an_explorer/map/foodweb_play.htm http://kids.nceas.ucsb.edu/biomes/index.html#games http://www.kidsgeo.com/geography-for-kids/0170-deciduous-forest.php http://switchzoo.com/games/habitatgame.htm http://sciencereviewgames.com/srg/games/hs.php?id=87 ** http://science.pppst.com/biomes/index.html Biomes PPT Biomes of the World Biomes Currituck County Schools Video The Nature of Ecosystems 6th grade McDougal Book- Unit D- Chapters 1-3
Assessment Tasks: Quizzes, labs, projects, formal assessment, foldable, science notebook	

Pacing Guide Unit 5

Unit/Focus: Space	**Time Frame: 7 weeks**
Standards: 6. E.1 Understand the earth/moon/sun system, and the properties, structures, and predictable motions of celestial bodies in the Universe. **Objectives:** 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 the Sun. 6. E.1.3 Summarize space exploration and the understandings gained from them. **Literacy Standards:** • Cite specific textual evidence to support analysis of science and technical texts. • Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. 8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text. 9. Compare and contrast the information gained from	**Essential Questions:** Is gravity necessary? How has space exploration affected us? Is it possible for us to live somewhere other than Earth? What is the significance of the sun and the moon to Earth?

experiments, simulations, video or multimedia sources with that gained from reading a text on the same topic. 10. By the end of grade 8, read and comprehend science/technical texts in the grade 6-8 text complexity band independently and proficiently. **Technology Standards:** 6. SI.1 Analyze resources to determine their reliability, point of view, bias, and relevance for particular topics and purposes. • 6.SI.1.1 Analyze resources in terms of their reliability (which can be determined by currency, credibility, or authority, depending on the topic or purpose) • 6.SI.1.2 Analyze content for relevance to the assigned task	
Vocabulary: Intensity Equator Revolution Rotation Tides Lunar Solar Force Eclipse Orbits Moon Satellites Debris	**Suggested Resources:** NC DPI Support Document Internet Life on other planets Reading Planets Celestia Planets Planet Profiles Planets and Dwarf Planets Solar System Star Warp

Asteroids Meteors Comets Dust Gases solar system frequencies atmosphere radiation exploration probes International Space Station Telescope Galaxy black hole	Earth Sun and Moon Moon Phase Game Currituck County Schools **Scientific Literature** *The Magic School Busa: Lost in Solar System* by Joanna Cole *The Solar System* (Fascinating Facts About) By Jane Walker *Eclipse! : The What, Where, When, and How Guide to Watching Solar and Lunar Eclipses* by Philip S. Harrington *Comets, Meteors and Asteroids* by Seymour Simon WildSide: Weird Science Book Textbook Space Video links The Earth Moon Sun System Moon Phases Powers of Ten 6th Grade McDougal Unit E- Chapters 1-4
Assessment Tasks: Research a planet, Quizzes, Labs, Formative Assessment, Summary, Chalk Talk, Pluto Debate, Foldable, Brochure, Group Project	

Pacing Guide Unit 6

Unit/Focus: Waves	**Time Frame:**
Standards: 6. P.1 Understand the properties of waves and the wavelike property of energy in earthquakes, light and sound. **Objectives:** 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.	**Essential Questions:** How do light waves compare to sound waves? How are light and sound by-products of energy? How do my eyes detect light waves enabling me to see? How do my ears detect sound waves enabling me to hear?
Vocabulary: Transmit Energy Matter Waves Force Vibration Wavelength Vacuum potential energy seismic waves longitudinal waves transverse waves trough	**Suggested Resources:** NC DPI Support Document Physics Zone Physics Classroom Sound and Fury NIH-How Your Brain Understands What Your Ears Hear Lights Light Think Quest NASA Visible Light optical illusions Would you believe your eyes? Light Sound Energy Energy Resources

crest amplitude compressional wave refraction visible light electromagnetic waves reflected scatter	**Scientific Literature** *Sound, Heat and Light: Energy at Work* by Melvin Berger *Max Axiom Energy Books* *Energy* by Alvin Silverstein 6th Grade McDougal- Unit C- Chapters 1-4
Assessment Tasks: Formal assessment, summary, quizzes, collage, Webquest	