## Jackson County Schools  
**Curriculum Pacing Guide**

**Environmental Science - High School**

### Fall / Spring Semester

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<td><strong>Water, Air, and Land</strong></td>
<td><strong>Mineral and Energy Resources</strong></td>
<td><strong>Future – Humans and the Earth</strong></td>
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<tr>
<td>10-12 days</td>
<td>18-20 days</td>
<td>13-15 days</td>
<td>25-30 days</td>
<td>10-12 days</td>
<td>5-7 days</td>
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<tr>
<td>SEV 1. (a,d,e)</td>
<td>SEV 1. (c,d,e)</td>
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<td>SEV 4. (f)</td>
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<td>SEV 2 (a,b,c,d)</td>
<td>SEV 2. (a,b,c,d)</td>
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<td>SEV 3. (a)</td>
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<td>SEV 3. (a,b,c,d,e)</td>
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<td>SEV 5. (c,e,f)</td>
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### Characteristics of Science

**Habits of Mind**

- **SCSh1.** Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.
- **SCSh2.** Students will use standard safety practices for all classroom laboratory and field investigations.
- **SCSh3.** Students will identify and investigate problems scientifically.
- **SCSh4.** Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.

- **SCSh5.** Students will demonstrate the computation and estimation skills necessary for analyzing data and developing reasonable scientific explanations.
- **SCSh6.** Students will communicate scientific investigations and information clearly.

**The Nature of Science**

- **SCSh7.** Students analyze how scientific knowledge is developed.
- **SCSh8.** Students will understand important features of the process of scientific inquiry.
- **SCSh9.** Students will enhance reading in all curriculum areas

### Literacy Standards in Science

**Key Ideas and Details**

- **L9-10RST1:** Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
- **L9-10RST2:** Determine the central ideas or conclusions of a text; trace the text’s explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
- **L9-10RST3:** Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text.

**Craft and Structure**

- **L9-10RST4:** 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 9–10 texts and topics.
- **L9-10RST5:** Analyze the structure of the relationships among concepts in a text, including relationships among key terms (force, friction, reaction force, energy).

- **L9-10RST6:** Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.

**Integration of Knowledge and Ideas**

- **L9-10RST7:** Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

- **L9-10RST8:** Assess the extent to which the reasoning and evidence in a text support the author’s claim or a recommendation for solving a scientific or technical problem.

- **L9-10RST9:** Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

**Range of Reading and Level of Text Complexity**

- **L9-10RST10:** By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.
## Unit 1:

**SEV1.** Students will investigate the flow of energy and cycling of matter within an ecosystem and relate these phenomena to human society.

- Interpret biogeochemical cycles including hydrologic, nitrogen, phosphorus, oxygen, and carbon cycles. Recognize that energy is not recycled in ecosystems.
- Relate the cycling of matter and the flow of energy to the Laws of Conservation of matter and energy. Identify the role and importance of decomposers in the recycling process.
- Distinguish between abiotic and biotic factors in an ecosystem and describe how matter and energy move between these.

**SEV2.** Students will demonstrate an understanding that the Earth is one interconnected system.

- Describe how the abiotic components (water, air, and energy) affect the biosphere.
- Recognize and give examples of the hierarchy of the biological entities of the biosphere (organisms, populations, communities, ecosystems, and biosphere).

**SEV3.** Students will describe stability and change in ecosystems.

- Explain succession in terms of changes in communities through time to include changes in biomass, diversity, and complexity.
- Explain how succession may be altered by traumatic events.
- Describe interactions between individuals (i.e. mutualism, commensalisms, parasitism, predation, and competition).
- Explain how biotic and abiotic factors influence populations.

## Unit 2:

**SEV1.** Students will investigate the flow of energy and cycling of matter within an ecosystem and relate these phenomena to human society.

- Relate food production and quality of nutrition to population growth and the trophic levels.
- Relate the cycling of matter and the flow of energy to the Laws of Conservation of matter and energy. Identify the role and importance of decomposers in the recycling process.
- Distinguish between abiotic and biotic factors in an ecosystem and describe how matter and energy move between these.

**SEV2.** Students will demonstrate an understanding that the Earth is one interconnected system.

- Describe how the abiotic components (water, air, and energy) affect the biosphere.

**SEV3.** Students will describe stability and change in ecosystems.

- Recognize and give examples of the hierarchy of the biological entities of the biosphere (organisms, populations, communities, ecosystems, and biosphere).
- Characterize the components that define a Biome.
  -- Abiotic Factors – to include precipitation, temperature and soils.
  -- Biotic Factors – plant and animal adaptations that create success in that biome.
- Characterize the components that define fresh-water and marine systems.
  -- Abiotic Factors – to include light, dissolved oxygen, phosphorus, nitrogen, pH and substrate.
- Characterize the components that define fresh-water and marine systems.
  -- Abiotic Factors – plant and animal adaptations characteristic to that system.
### Jackson County Schools
### Curriculum Pacing Guide

#### Unit 3:

| SEV3. Students will describe stability and change in ecosystems. | Relate these to factors affecting growth rates and carrying capacity of the environment.  
| e. Describe interactions between individuals (i.e. mutualism, commensalisms, parasitism, predation, and competition). | b. Describe the effects of population growth, demographic transitions, cultural differences, emergent diseases, etc. on societal stability.  
| SEV5. Students will recognize that human beings are part of the global ecosystem and will evaluate the effects of human activities and technology on ecosystems. | e. Describe the effects and potential implications of pollution and resource depletion on the environment at the local and global levels (air/water pollution, solid waste disposal, depletion of the stratospheric ozone, global warming, land uses).  
| a. Describe factors affecting population growth of all organisms, including humans. |  

#### Unit 4:

| SEV1. Students will investigate the flow of energy and cycling of matter within an ecosystem and relate these phenomena to human society.  
| c. Relate food production and quality of nutrition to population growth and the trophic levels. |  
| SEV3. Students will describe stability and change in ecosystems. | c. Describe how energy and other resource utilization impact the environment and recognize that individuals as well as larger entities (businesses, governments, etc.) have impact on energy efficiency.  
| a. Describe interconnections between abiotic and biotic factors, including normal cyclic fluctuations and changes associated with climatic change (i.e. ice ages). | f. Describe the need for informed decision making of resource utilization. (i.e. energy and water usage allocation, conservation, food and land, and long-term depletion)  
| SEV4. Students will understand and describe availability, allocation and conservation of energy and other resources |  
| a. Differentiate between renewable and nonrenewable resources including how different resources are produced, rates of use, renewal rates, and limitations of sources. Distinguish between natural and produced resources. | c. Explain how human activities affect global and local sustainability.  
| b. Describe how technology is increasing the efficiency of utilization and accessibility of resources. | d. Describe the actual and potential effects of habitat destruction, erosion, and depletion of soil fertility associated with human activities.  
| SEV5. Students will recognize that human beings are part of the global ecosystem and will evaluate the effects of human activities and technology on ecosystems. | e. Describe the effects and potential implications of pollution and resource depletion on the environment at the local and global levels (air/water pollution, solid waste disposal, depletion of the stratospheric ozone, global warming, land uses).  
| c. Explain how human activities affect global and local sustainability. | f. Describe how political, legal, social, and economic decisions may affect global and local ecosystems.  

#### Unit 5:

| SEV4. Students will understand and describe availability, allocation and conservation of energy and other resources |  
| a. Differentiate between renewable and nonrenewable resources including how different resources are produced, rates of use, renewal rates, and limitations of sources. Distinguish between natural and produced resources. |  
| b. Describe how technology is increasing the efficiency of utilization and accessibility of resources. |  
| c. Describe how energy and other resource utilization impact the environment and recognize that individuals as well as larger entities (businesses, governments, etc.) have impact on energy efficiency.  
| e. Describe the commonly used fuels (e.g. fossil fuels, nuclear fuels, etc.) and some alternative fuels (e.g. wind, solar, ethanol, etc.) including the required technology, availability, pollution problems and implementation problems. Recognize the origin of fossil fuels and problems associated with dependence on this energy source.  
| SEV5. Students will recognize that human beings are part of the global ecosystem and will evaluate the effects of human activities and technology on ecosystems. | c. Explain how human activities affect global and local sustainability.  
| e. Describe the effects and potential implications of pollution and resource depletion on the environment at the local and global levels (air/water pollution, solid waste disposal, depletion of the stratospheric ozone, global warming, land uses).  
| f. Describe how political, legal, social, and economic decisions may affect global and local ecosystems. |  

Jackson County Schools
High School Science - Physical Science
June 3, 2013
### Unit 6:

<table>
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<tr>
<th><strong>SEV4.</strong> Students will understand and describe availability, allocation and conservation of energy and other resources</th>
<th>Relate these to factors affecting growth rates and carrying capacity of the environment.</th>
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<td><strong>SEV5.</strong> Students will recognize that human beings are part of the global ecosystem and will evaluate the effects of human activities and technology on ecosystems.</td>
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<td><strong>f.</strong> Describe how political, legal, social, and economic decisions may affect global and local ecosystems.</td>
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