<table>
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<tr>
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<th>SECOND SEMESTER</th>
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<td><strong>EVS2-ETS1-2</strong></td>
<td><strong>EVS-ESS3-1</strong></td>
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<tr>
<td><strong>EVS-ESS3-2</strong></td>
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</table>

**Recurring**

**RST.11-12.2** Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

**RST.11-12.3** Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

**RST.11-12.4** 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 11–12 texts and topics.

**RST.11-12.9** Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

**WHST.11-12.1** Write arguments focused on discipline-specific content.
<table>
<thead>
<tr>
<th>Unit 1</th>
<th>The Geosphere</th>
<th>Grade Level</th>
<th>11</th>
<th>Approx length</th>
<th>5 weeks</th>
</tr>
</thead>
</table>

Arkansas State Standards

- **EVS-ESS2-3** Develop a model based on evidence of Earth’s interior to describe the cycling of matter by thermal convection.
Unit 2  The Atmosphere  Grade Level  11-12  Approx Length  4 weeks

CPSD Power Standards with Student Learning Objectives

EVS-ESS3-5 Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.

Student-Friendly Objectives:
- I can use evidence to analyze a climate model.
- I can use a climate model to describe part of an Earth system.
- I can describe human activities that have contributed to climate change.
- I can predict possible impacts to Earth due to climate change.

Learning Indicators of Power Standards

Students will know...
- The difference between climate and weather
- Earth systems will be impacted by climate change

And be able to...
- Analyze a weather report.
- Compare and contrast daily weather and climate models.
- Predict future local and global impacts due to climate change.
- Use evidence to explain examples of human activities that have contributed to climate change.
- Compare and contrast natural hazards and human caused events.

Additional Arkansas State Standards

- EVS-ESS2-2 Analyze geoscience data to make the claim that one change to Earth’s surface can create feedbacks that cause changes to other Earth systems.
- EVS-ESS2-4 Use a model to describe how variations in the flow of energy into and out of Earth’s systems result in changes in climate.
- EVS-ESS3-6 Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.
- EVS-PS3-2 Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects).
<table>
<thead>
<tr>
<th>Unit 3</th>
<th>The Hydrosphere</th>
<th>Grade Level</th>
<th>11-12</th>
<th>Approx Length</th>
<th>4 weeks</th>
</tr>
</thead>
</table>

**Arkansas State Standards**

- **EVS-ESS2-5** Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.
- **EVS-PS3-1** Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.
- **EVS-ETS1-1** Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
## CPSD Power Standards with Student Learning Objectives

**EVS-ESS2-6** Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.

### Student-Friendly Objectives:
- I can describe how carbon is cycled in the biosphere.
- I can predict long-term effects of volcanic ash on the carbon cycle.
- I can analyze a model of the carbon cycles.
- I can create and describe a quantitative model of the carbon cycle.
- I can explain how humans affect the carbon cycle.
- I can calculate my carbon footprint.
- I can describe how carbon enters and leaves the atmosphere.
- I can identify how the geosphere, atmosphere, hydrosphere, and biosphere play a role in the cycling of carbon.
- I can demonstrate how industry and transportation contribute to the carbon cycle.
- I can determine how fossil fuels are created and how they are used by humans.
- I can determine how carbon levels affect the greenhouse gasses.
- I can create an explanation for climate change based on carbon dioxide levels and runaway greenhouse gas effect.

## Learning Indicators of Power Standards

Students will know...
- How energy is cycled within and amongst each sphere: hydrosphere, atmosphere, geosphere, and biosphere
- Earth is a closed system, but its spheres are interacting systems.
- Types of energy sources in Arkansas
- Deforestation causes an increase in carbon dioxide in the atmosphere
- Organic matter is made mostly of carbon
- Decomposition returns carbon to the geosphere

And be able to...
- Create a quantitative model of the cycling of carbon.
- Explain how humans affect the carbon cycle.
- Describe a carbon sink and its importance to the environment.
- Calculate their carbon “footprint.”
- Evaluate Arkansas’ energy production and usage.

## Additional Arkansas State Standards
- **EVS-LS2-8** Evaluate evidence for the role of group behavior on individual and species’ chances to survive and reproduce.
<table>
<thead>
<tr>
<th>Unit 5</th>
<th>Populations</th>
<th>Grade Level</th>
<th>11-12</th>
<th>Approx Length</th>
<th>5 weeks</th>
</tr>
</thead>
</table>

**CPSD Power Standards with Student Learning Objectives**

**EVS-LS2-6** Evaluate claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

**Student-Friendly Objectives:**
- I can describe the levels of organization of within/of an ecosystem.
- I can model the flow of energy through an ecosystem.
- I can analyze relationships between organisms in an ecosystem.
- I can describe the difference between ecosystems and biomes.
- I can predict outcomes ecosystem instability.
- I can compare changes in population data.
- I can explain how new ecosystems are created.

**Learning Indicators of Power Standards**

Students will know...
- Characteristics/components of an ecosystem
- Factors that make an ecosystem stable/unstable
- The difference between biomes and ecosystems
- Extreme changes in conditions or the size of any population can challenge the functioning of ecosystems in terms of resources and habitat availability
- A keystone species is a species on which an ecosystem depends

And be able to...
- Model energy flow through an ecosystem.
- Use evidence to identify ecosystem changes.
- Describe the role of ecological succession in creating new ecosystems.
- Compare changes in population data from different years.
- Evaluate claims, evidence, and reasoning about ecosystems and habitat loss from different sources.

**Additional Arkansas State Standards**

- **EVS-LS2-1** Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.
- **EVS-LS2-2** Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.
- **EVS-LS4-6** Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.
- **EVS-ETS1-3** Evaluate a solution to a complex real-world problem based on prioritized criteria and tradeoffs that account for a range of constraints,
including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
### Unit 6: Land

<table>
<thead>
<tr>
<th>Grade Level</th>
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<td>11-12</td>
<td>4 weeks</td>
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#### Arkansas State Standards

- **EVS-ESS3-3** Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity.
- **EVS-ESS3-4** Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
- **EVS-LS2-7** Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.
<table>
<thead>
<tr>
<th>Unit 7</th>
<th>Energy</th>
<th>Grade Level</th>
<th>11-12</th>
<th>Approx Length</th>
<th>4 weeks</th>
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**Arkansas State Standards**

- **EVS-PS3-3** Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.
- **EVS-PS3-4** Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).
- **EVS-ETS1-2** Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
- **EVS-ESS3-1** Construct an explanation based on evidence for how the availability of natural resources, occurrences of natural hazards, and changes in climate have influenced human activity.
<table>
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<tr>
<th>Unit 8</th>
<th>Waste and Citizenship</th>
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<th>Approx Length</th>
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### CPSD Power Standards with Student Learning Objectives

**EVS-ESS3-2** Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.

**Student-Friendly Objectives:**
- I can compare and contrast cost benefits of environmental practices.
- I can explain how water is used and managed.
- I can describe various methods of how minerals are extracted.
- I can use evidence to determine the most sustainable products for human use.
- I can develop a plan to reduce personal environmental impact.

### Learning Indicators of Power Standards

**Students will know...**
- Resource availability has guided the development of human society
- Types of land management strategies and techniques
- The differences between conservation, sustainability, and economic efficiency

**And be able to...**
- Compare and contrast the cost benefits of different environmental practices.
- Describe how mineral resources are extracted.
- Explain how water is used and managed within a community.
- Determine the most sustainable products for daily human consumption and use.
- Develop a plan to reduce personal environmental impact.

### Additional Arkansas State Standards

- **EVS-ETS1-3** Evaluate a solution to a complex real-world problem based on prioritized criteria and tradeoffs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.