

## Earth and Space Science Pacing Guide

\*Block Scheduling (80 Min. Classes)\*

1	First Week of School
<b>Unit 1 Birth of the Solar System and Earth (15 classes)</b>	
2	Instructional Sequence 1: <b>HS-ESS1-1</b> Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation. <b>HS-ESS1-3</b> Communicate scientific ideas about the way stars, over their life cycle, produce elements. (4-5 instructional classes/1 assessment)
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4	Instructional Sequence 2: <b>HS-ESS1-2.</b> Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe. (3 instructional classes/1 assessment)
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6	Instructional Sequence 3: <b>HS-ESS1-6.</b> Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history. (2 instructional classes/2 assessment)
7	Unit 1 Final Assessments/Reflections
<b>Unit 2 Earth's Early Geology (13 classes)</b>	
8	Instructional Sequence 1: <b>HS-ESS2-3</b> Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection. (2 classes/1 assessment)
9	Instructional Sequence 2: <b>HS-ESS1-5</b> Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks. <b>HS-ESS2-1</b> Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features. (4 classes/1 assessment)
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11	Instructional Sequence 3: <b>HS-ETS1-3</b> Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts. (1 class/3 project-based)
12	Unit 2 Final Assessments/Reflections
<b>Unit 3 Earth's Atmosphere and Climate - Then and Now (24 classes)</b>	
13	Instructional Sequence 1: <b>HS-ESS2-7.</b> Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth. <b>HS-LS2-5.</b> Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. <b>HS-LS1-5.</b> Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy. (3 classes/1 assessment)

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15	Instructional Sequence 2: <b>HS-ESS2-6</b> . Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere. <b>HS-ESS3-6</b> . Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.* (4 classes/1 assessment)
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17	Instructional Sequence 3: <b>HS-ESS2-4</b> . Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate. (2 classes/1 assessment)
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19	Instructional Sequence 4: <b>HS-ESS3-5</b> . 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. <b>HS-ETS1-1</b> . Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants. (6 classes/4 project-based)
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23	Unit 3 Final Assessments/Reflections
<b>Unit 4 Water Resources (17 classes)</b>	
24	Instructional Sequence 1: <b>HS-ESS2-5</b> . Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes. (4 classes, 1 assessment)
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26	Instructional Sequence 2: <b>HS-ESS2-2</b> . Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems. (3 classes, 1 assessment) <b>HS-ESS3-4</b> . Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.* (6 classes/2 assessment)
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29	Instructional Sequence 3: <b>HS-ESS3-1</b> . Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity. (2 classes, 2 assessment)
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31	Unit 4 Final Assessment/Reflections
<b>Unit 5 The Anthropocene (15 classes)</b>	
32	Instructional Sequence 1: <b>HS-ESS3-3</b> . Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity. <b>HS-ESS3-6</b> . Use a computational representation to illustrate the

	relationships among Earth systems and how those relationships are being modified due to human activity. (8 classes, 1-2 assessment)
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35	Instructional Sequence 2: HS-ESS3-2. Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.* HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.* (4-5 assessment (project based learning))
36	Unit 5 Final Assessment/Reflections