EPSD Curriculum and

HMH SCIENCE DIMENSIONS 2018 Alignment TEMPLATE

GRADE 6

EPSD Unit 5: Space Systems (part I) Fourth Marking Period

Overview: This unit is broken down into three sub-ideas: the universe and its stars, Earth and the solar system, and the history of planet Earth. Students examine the Earth's place in relation to the solar system, the Milky Way galaxy, and the universe. There is a strong emphasis on a systems approach and using models of the solar system to explain the cyclical patterns of eclipses, tides, and seasons. There is also a strong connection to engineering through the instruments and technologies that have allowed us to explore the objects in our solar system and obtain the data that support the theories explaining the formation and evolution of the universe. Students examine geosciences data in order to understand the processes and events in Earth's history. The crosscutting concepts of patterns, scale, proportion, and quantity, and systems and systems models provide a framework for understanding the disciplinary core ideas. Students are expected to demonstrate proficiency in developing and using models and analyzing and interpreting data. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Standards: (MS-ESS1-1) Develop and use a model of the Earth-sun moon system to Instructional Days: 60-65

HMH Science Dimensions Program Resources Module H

Unit 1: Patterns in the Solar System

Unit Video: (total solar eclipse); Why it Matters p. 2; Unit Starter p. 3; Vocabulary p. 3I; Unit Project p. 3K; Unit Connections p. 50; Unit Review pp. 51-54; Unit Performance Task pp. 55-56

Standard for all Units: (D) Interactive Multilingual Glossary; (D/P) Unit Pretest; (D) Lesson Quizzes; (D/P) Unit Tests

Lesson 1: The Earth-Sun-Moon System pp. 4-27

D/P - WIM Questions p. 2

D/P- CYEI (digital pictures) Why can we see the moon at night and also during the day? p. 5

P- ENB (prompt) Students gather evidence to help explain why we see the moon at night and also during the day. p. 5

D/P- The Sun's Path in the Sky (Students watch animation to see the motion of the path of the sun across the sky.) p. 6
D/P- HOL Activity Model the Apparent Motion of the Sun (Students model the

Lesson 2: Seasons pp. 28-49

D/P – WIM Questions p. 2

D/P- CYEI (video) Why is winter cold with shorter days than summer? p. 29

P- ENB (prompt) Student gather evidence to help explain why winter days are colder and shorter than summer days. p. 29

D/P- Changes in Stars Seen in the Night Sky (Through role playing, students investigate why star patterns change yearly.) p. 30

D/P- Some Stars Are Seen in Different Seasons (Students explore images online to see some of the different

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describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. (MS-ESS1-2) Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. (MS-ESS1-3) Analyze and interpret data to determine scale properties of objects in the solar system.

Objective 1: Students will: Explain the cause of day and night, the cycle of seasons, moon phases, eclipses, and tides. Explain how gravity and inertia keep objects in orbit.

Objective 2: Students will: Compare and contrast geocentric and heliocentric solar system models. Identify evidence that supports the heliocentric solar system model. Relate the structure and features of the sun to how each impacts Earth. Identify the major features or the planets and group them based on similarities. Compare and contrast features of comets, asteroids, meteors, and planets. Identify the conditions needed for living things to survive beyond Earth.

Objective 3: Students will: Identify criteria used to classify stars. Explain how distances to stars can be calculated. Trace the life cycle of a star. Compare and contrast star systems and galaxies.

Earth-sun system to develop an explanation for night and day and the apparent motion of the sun in the sky.) pp. 8-9

P- ENB (prompt) How does the orbit of the moon help to explain why we can see the moon in the sky both during the day and at night? p. 10

D/P- The Earth and Moon Move around the Sun (Students watch the video of Earth's orbit around the sun.) p. 11 D/P- DTM Analyze Star Motion (Students use the proportional relationship between a full rotation and partial rotation of stars around the North Star to calculate the passage of time.) p. 11 D/P- HOL Activity Model Moon Phases (Students model the Earth-sun-moon system to develop an explanation for the changing appearance of the moon as seen from the Earth.) pp. 13-14 D/P- LS Students compare the information read so far in the text with what they observed in the experiment.) p. 14

D/P- Phases of the Moon (Students explore the phases of the moon seen from Earth as the moon orbits Earth.) p. 15

P- ENB (prompt) How does the model of phases of the moon help to explain why

constellations seen at different times of year.) p. 31

D/P- Some Stars Are Seen All Year (Students examine photos online that show stars during different seasons.) p. 32

D/P- Seasons of the Year: The Four Seasons for the Year (Students explore images to learn about the season of the year in the Northern Hemisphere.) p. 33 D/P- The Path of the Sun in Summer and Winter in the Northern Hemisphere (Students watch the animation to see the path of the sun as it travels across the sky.) p. 34

D/P- HOL Activity Model Sunlight
Distribution (Students explore what
happens when light is spread out
compared to when it is not spread out.)
p. 35

D/P- DTM Students compare totals from the HOL Activity and explain what they think the data means. p. 35 D/P- LS Students write a short essay to compare what they observed in their investigation to what they saw in the image and what they read about the angles of sunlight striking Earth. p. 37 D/P- ENB (prompt) How do the length of days and the path of the sun across the

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Evaluate evidence for the big bang and expanding universe.

Topic 1: Earth in Space; Gravity and Motion; Phases, Eclipses, and Tides; Earth's Moon; and Twenty-First Century Themes and Skills (TFCTS) to include: The Four C's Life and Career Skills

Topic 2: Solar System; Sun Structure; Planets; Comets, Asteroids, and Meteors; Life Beyond Earth; and TFCTS including Information and Media literacy

Topic 3: Characteristics of Stars; Lives of Stars; Star Systems and Galaxies; The Expanding Universe and TFCTS

Essential Questions: What pattern in the Earth–sun–moon system can be used to explain lunar phases, eclipses of the sun and moon, and seasons? What is the role of gravity in the motions within galaxies and the solar system? What are the scale properties of objects in the solar system?

we can see the moon in the sky both during the day and at night? p. 16 D/P- ENGIT Students use criteria and constraints in the text, as well as knowledge from the lesson, to recommend the best time to conduct an expedition to the moon. p. 16 D/P- HOL Activity Model Solar and Lunar Eclipses (Students model the Earth-sunmoon system to develop an explanation for solar and lunar eclipses.) p. 18 D/P- Types of Solar Eclipses (Students watch video to see the progression of a total solar eclipse.) pp. 20-21 D/P- Types of Lunar Eclipses (Students watch the video to see the moon coming out of Earth's shadow during a total lunar eclipse.) p. 21

D/P- TIF (enrich) People in Science: Leon Foucault, Physicist pp. 23-24
D- Hands-On Lab; Using Shadows and Shade; Propose Your Own Path D/P- DTM Students use ratios to calculate the time it would take for Foucault's pendulum to complete one full circle. p. 24

D/P- Lesson Self Check pp. 25-27

D- Lesson Quiz

D- Make Your Own Study Guide

P-DI (ELL/RTI) p. 31

sky help to explain why winter is cold with shorter days? p. 37 D/P- Analyze How Earth's Shape Affects Patterns of Sunlight (Students respond to questions and draw a model of the way the sun's rays would strike a cubeshaped planet.) p. 38 D/P- HOL Activity Model Patterns of Sunlight Throughout Earth's Revolution (Students model the tilt of Earth.) pp. 40-41

D/P- The Effect of Earth's Tilt on Daylight Hours: Hours of Daylight by Latitude (Students watch video showing Earth's revolution around the sun.) p. 42

P- ENB (prompt) How can the tilt of Earth be used in an explanation of why winter has cold temperatures and short daylight hours? p. 44

D/P- TIF (enrich) Landing of the Midnight Sun pp. 45-46

D- Hands-On Lab; Exploring Ways Organisms Adjust to the Seasons; Propose Your Own Path

D/P- Lesson Self Check pp. 47-49

D- Lesson Quiz

D- Make Your Own Study Guide

P-DI (ELL/RTI) p. 31

P- Extension p. 31

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P- Extension p. 3I P- COLLAB p. 3J P- Connections to Other Disciplines p. 3J D- Science Safety HB D- CCC-HB D- ELA-HB D- Math-HB D- SEP-HB D- ScienceSaurus Reference HB D- YSI Simulation When Will an Eclipse Occur? D- VBP Data from Space D- VL Spheres in Space	P- COLLAB p. 3J P- Connections to Other Disciplines p. 3J D- Science Safety HB D-CCC-HB D- ELA-HB D- Math-HB D- SEP-HB D- ScienceSaurus Reference HB D- VL Seasons
D- VBP Data from Space	

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Curriculum Alignment Common Language (CACL) Guide 6-8			
Acronym	Word/Phrase	Description	
CER	Claims Evidence Reasoning	Students make a claim and gather evidence along the way (during EXPLORATORY activities) to support claim.	
ССС-НВ	Crosscutting Handbook	Students who need extra support in grasping concepts or to refresh student knowledge of skills.	
CYEI	Can You Explain It	Lesson phenomenon used to ENGAGE students in learning at the beginning of the lesson.	
CYSI	Can You Solve It	Lesson phenomenon used to ENGAGE students in learning at the beginning of the lesson.	
D	Digital	Program resources and features in interactive digital form.	
DI (ELL/RTI)	Differentiated Instruction (English Language		
Extension	Learner/Response to Intervention)	A page that lists all learning activities used to	
COLLAB	Collaboration	differentiate learning, engage students in collaborative	
Connections	Connections to Other Disciplines	activities and connect learning to other subjects.	
to Other			
Disciplines			
DTM	Do the Math	Integrated subject learning.	
ENB	Evidence Notebook	Student notebook or journal used to gather evidence during EXPLORATORY learning activities to support their claims.	
ENGIT	Engineer It	Integrated subject learning.	
ELA-HB	English Language Arts Handbook	Students who need extra support in grasping concepts or to refresh student knowledge of skills.	
HOL	Hands-On Lab	Activities or experiments that enable students to demonstrate scientific procedures and analysis.	
LS	Language SmArts	Integrated subject learning.	

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M-HB	Math Handbook	Students who need extra support in grasping concepts or to refresh student knowledge of skills.
Р	Print	Program resources and features in print form.
SEP-HB	Science and Engineer Practices Handbook	Students who need extra support in grasping concepts or to refresh student knowledge of skills.
TIF	Take It Further (enrich)	Enrichment activities for students in digital or print.
VBP	Video Based Project	Real life videos related to science and/or engineering that enable students to demonstrate mastery of performance expectations.
VL	Virtual Lab	Fully interactive simulations in which students perform experiments, collect data and answer questions.
WIM	Why It Matters	Questions related to lessons within each unit that asks students to consider how science affects the world around them.
YSI	You Solve It (Simulation)	Open-ended simulation-based learning with multiple answer options.