Lab-Aids Correlation for

Michigan K-12 Standards: High School Earth and Space Sciences

Din Seaver, Curriculum Development and Product Manager, Lab-Aids
Lisa Kelp, Vice President, Lab-Aids Institute

This document is intended to show how the *EDC Earth Science, Revised Edition* materials align with the Michigan K-12 Standards: Science, November 2015.

ABOUT OUR PROGRAMS

Lab-Aids has maintained its home offices and operations in Ronkonkoma, NY, since 1963. We publish over 200 kits and core curriculum programs to support science teaching and learning, grades 6-12. All core curricula support an inquiry-driven pedagogy, with support for literacy skill development and with assessment programs that clearly show what students know and are able to do as a result of program use. All programs have extensive support for technology and feature comprehensive teacher support. For more information, please visit https://www.lab-aids.com/edc.

ABOUT *EDC EARTH SCIENCE*

EDC Earth Science – Revised (EDC-R), Copyright 2021, is a full year, activity-driven high school earth science course developed by the Education Development Center (EDC), with support from the National Science Foundation, and is fully aligned to the *Next Generation Science Standards (*NRC and Lead States, 2013). *EDC Earth Science* is designed around the belief that students are capable of rigorous and in-depth explorations in science when given adequate support, structure, and motivation for learning.

EDC Earth Science features the following design components:

- In-depth treatment of content based on recommendations in NGSS and representative state frameworks
- Developmentally appropriate lessons featuring Earth Science concepts that build on previous learning and prepare students for more advanced courses
- Using historical, newsworthy, and fictionalized stories to draw students into the earth science content, to motivate them to acquire the knowledge for solving problems, and to serve as a framework around which students build conceptual understanding
- Differentiated instructional strategies and activities that help students construct meaning from their experiences and that serve as bridges between concrete and abstract thinking
- Support for developing literacy skills and the use of formative assessment techniques

Each chapter of *EDC: Earth Science* is a cluster of activities that addresses a specific set of concepts and skills. The amount of class time for each chapter will vary. A chapter may range from one to four weeks of classroom sessions. Not shown here are two project-oriented shorter chapters that open and close the course, which taken together require 2-4 weeks for completion. This provides up to 32 weeks of actual instructional time, plus an additional 4 weeks for assessment and related activities.

EDC Earth Science		
Unit Title	*Core Science Content*	*Suggested Time*
1 Hydrosphere: Water in Earth's Systems	Water cycle; surface water, groundwater, assessing and protecting water supplies, Global patterns of ocean circulation; how wind and density differences drive ocean currents; global conveyor belt; El Niño	3-4 weeks
2 Atmosphere and Climate	Climate and weather; influence of latitude, atmospheric circulation, proximity to ocean, elevation, land features, and prevailing winds on regional climate, energy balance, albedo effect, greenhouse effect, carbon cycle, positive and negative feedback loops; Paleoclimatology, climate proxies, climate change in Earth's past, Milankovitch cycles, tectonic processes that influence climate, human impact on climate	5-8 weeks
3 Earth's Place in the Universe	Life and death of stars, solar nebular condensation hypothesis, Kepler's Laws, Earth's interior structure and composition, internal sources of heat energy, seismic waves, introduction to plate tectonic theory, driving forces of plate movement	3-4 weeks
4 Plate Tectonics	Transform-fault boundaries, earthquakes, physical and computer models Subduction zones, volcanoes, formation of igneous rocks, field-measurement technologies for volcano monitoring seafloor spreading, paleomagnetism, plate tectonics summary, landforms associated with plate boundaries	5-7 weeks
5 The Rock Cycle	Erosion and deposition, deltaic processes, formation of sedimentary rock, The nature of rocks and minerals, rock cycle	3-6 weeks
6 Earth Resources	The geologic processes by which mineral ores are formed; mineral extraction and processing, fossil fuel formation, petroleum resources and exploration technologies	3-6 weeks

Each Teacher Edition chapter provides detailed information on support for key NGSS core content, practices, crosscutting concepts, use of phenomena in EDC-R and more. For more information, visit us at www.lab-aids.com/edc.

ABOUT THE LAB-AIDS CITATIONS

Citations included in the correlation document are as follows:

Unit number and name	Unit 3: Earth's Place in the Universe
Chapter, Student Book pages, and Resource Supplement(s)	Chapter 8: 200-203, 212-215, RS 8.0
Performance Expectation	HS-ESS1-2 * Integrates traditional science content with engineering **Allow for local, regional, or Michigan specific contexts or examples in teaching and assessment.

Performance Expectation	Location in EDC-R Earth Science Unit and title Chapter and pages
Space Systems	
HS-ESS1-1. 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.	Unit 3: Earth's Place in the Universe Chapter 8: 200-203, 212-215, RS 8.0
HS-ESS1-2. 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.	Unit 3: Earth's Place in the Universe Chapter 8: 200-206, RS 8.0
HS-ESS1-3. Communicate scientific ideas about the way stars, over their life cycle, produce elements.	Unit 3: Earth's Place in the Universe Chapter 8: 200-201
HS-ESS1-4. Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.	Unit 3: Earth's Place in the Universe Chapter 8: 208-209
History of Earth	
HS-ESS1-5. 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.	Unit 4: Plate Tectonics Chapter 10: 256-260 Chapter 12: 342-347 Unit 5: The Rock Cycle Chapter 14: 399-401, 415-426
HS-ESS1-6. 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.	Unit 3: Earth's Place in the Universe Chapter 9: 195-199, 203-206 Unit 5: The Rock Cycle Chapter 14: 415-426
HS-ESS2-1. 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.	Unit 3: Earth's Place in the Universe Chapter 9: 241-244 Unit 4: Plate Tectonics Chapter 10: 250-279 Chapter 11: 289-322, RS 11.1 Chapter 12: 336-345, 350-352 Unit 5: The Rock Cycle Chapter 13: 363-389 Chapter 14: 415-426, RS 14.1

Performance Expectation	Location in EDC-R Earth Science Unit and title Chapter and pages
Earth's Systems	
HS-ESS2-2. Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to Earth's systems.	Unit 1: Hydrosphere: Water in Earth's Systems Chapter 3: 66-70, 72-76 Unit 2: Atmosphere and Climate Chapter 4: 102-106 Chapter 5: 115-135, RS 5.0 Chapter 6: 155-164
HS-ESS2-3. Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.	Unit 3: Earth's Place in the Universe Chapter 9: 241-244 Unit 4: Plate Tectonics Chapter 11: 317-319 Chapter 12: 342-352
HS-ESS2-5. Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes. **	Unit 1: Hydrosphere: Water in Earth's Systems Chapter 2:24-35 Chapter 3: 58-76 Unit 2: Atmosphere and Climate Chapter 4: 99-103 Chapter 5: 116-124, 133-135 Chapter 6: 165-175
HS-ESS2-6. Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.	Unit 2: Atmosphere and Climate Chapter 5: 124-135 Chapter 6: 160-163
HS-ESS2-7. Construct an argument based on evidence about the coevolution of Earth's systems and life on Earth.	Unit 1: Hydrosphere: Water in Earth's Systems Chapter 2: 36-40 Unit 2: Atmosphere and Climate Chapter 5: 127-135, RS 5.1 Chapter 6: 165-178 Unit 3: Earth's Place in the Universe Chapter 8: RS 8.1 Unit 5: The Rock Cycle Chapter 13: 387-389 Chapter 14: 425-426 Unit 6: Earth Resources Chapter 15: 447-453 Chapter 16: 479-485

Performance Expectation	Location in EDC-R Earth Science Unit and title Chapter and pages
Weather and Climate	
HS-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.	Unit 1: Hydrosphere: Water in Earth's Systems Chapter 3: 66-76 Unit 2: Atmosphere and Climate Chapter 4: 94-98 Chapter 5: 115-123 Chapter 6: 165-178
HS-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.**	Unit 2: Atmosphere and Climate Chapter 6: 165-178
Human Sustainability	
HS-ESS3-1. 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.	Unit 1: Hydrosphere: Water in Earth's Systems Chapter 2: 18-20, 38-40 Unit 4: Plate Tectonics Chapter 10: 250-253, 283-284 Chapter 11: 290-292, 321-322 Unit 5: The Rock Cycle Chapter 13: 358-361, 387-389, RS 13.1 Unit 6: Earth Resources Chapter 15: 432-435, 444-456 Chapter 16: 461-468, 479-485
HS-ESS3-2. Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.* **	Unit 6: Earth Resources Chapter 16: 482-484, RS 16.1
HS-ESS3-3. Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity. **	Unit 1: Hydrosphere: Water in Earth's Systems Chapter 2: 18-23 Unit 2: Atmosphere and Climate Chapter 5: 127-132 Chapter 6: 165-178 Unit 6: Earth Resources Chapter 16: 463-467

Performance Expectation	Location in EDC-R Earth Science Unit and title Chapter and pages
HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.*	Unit 1: Hydrosphere: Water in Earth's Systems Chapter 2: 38-40 Unit 5: The Rock Cycle Chapter 13: 387-389 Unit 6: Earth Resources Chapter 15: 447-453, RS 15.2 Chapter 16: 479-481
HS-ESS3-6. Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.	Unit 2: Atmosphere and Climate Chapter 5: 127-135 Chapter 6: 165-175