

**Science Textbook Correlation to the
2018 Earth Science Standards of Learning Curriculum Framework**

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| Publisher Lab-Aids, Inc | Text: <i>EDC Earth Science</i>, Student Edition (SB) and Teacher Edition (ATE) | Copyright date 2014 |
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| STANDARD | Correlation: Must address both the standards and the curriculum framework. Use page number and ATE for Annotated Teacher Edition or CT for Core Technology. (Identify no more than 8 correlations.) |
| ES.2 The student will demonstrate an understanding that there are scientific concepts related to the origin and evolution of the universe. Key ideas include | |
| a) the big bang theory explains the origin of universe; | Ch 8 – Solar System Origins SB: 200-201; ATE: 264-265 |
| b) stars, star systems, and galaxies change over long periods of time; | Ch 8 – Solar System Origins SB:200-201, 203-206; ATE: 264-265, 267-271 |
| c) characteristics of the sun, planets and their moons, comets, meteors, asteroids, and dwarf planets are determined by materials found in each body; and | Ch 8 – Solar System Origins SB:200-201, 203-206, 212-215; ATE: 264-265, 267-271, 279-281 |

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d) evidence from space exploration has increased our understanding of the structure and nature of our universe.

Ch 8 – Solar System Origins

SB: 195-196, 212-215; ATE: 259-260, 279-281

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| ES.3 The student will investigate and understand that Earth is unique in our solar system. Key ideas include | |
| a) Earth supports life because of its relative proximity to the sun and other factors; and | Ch 1 – Comparing Earth to Other Worlds SB: 6-12; ATE: 10-13 |
| b) the dynamics of the sun-Earth-moon system cause seasons, tides, and eclipses. | Not addressed |

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| ES.4 The student will investigate and understand that there are major rock-forming and ore minerals. Key ideas include | |
| a) analysis of physical and chemical properties supports mineral identification; | Ch 14 – Building Earth’s Crust SB: 410-414, 426; ATE: 540-544 |
| b) characteristics of minerals determine the uses of minerals; and | Ch 15 – Mineral Resources SB: 435-438, 453-456; ATE: 577-580, 596-601 |
| c) minerals originate and are formed in specific ways. | Ch 15 – Mineral Resources SB:439-444; ATE: 581-586 |

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| ES.5 The student will investigate and understand that igneous, metamorphic, and sedimentary rocks can transform. Key ideas include | |
| a) Earth materials are finite and are transformed over time; | Ch 13 – Sedimentary Processes in a Delta SB: 363-370, 384-387; ATE: 480-485, 503-506 Ch 14 – Building Earth’s Crust SB: 415-423, 426-427; ATE: 545-555 |
| b) the rock cycle models the transformation of rocks; | Ch 14 – Building Earth’s Crust SB: 415-419; ATE: 545-551 |
| c) layers of Earth have rocks with specific chemical and physical properties; and | Ch 9 – Exploring Earth’s Interior SB: 227-230, 233-235, 241-245; ATE: 303-306, 310-313, 319-325 |
| d) plate tectonic and surface processes transform Earth materials. | <i>All previous citations for this standard ES.5 plus</i> Ch 11 – Subduction-Zone Volcanoes SB: 293-295, 298-303; ATE: 388-391, 397-400 Ch 12 – Divergent Boundaries SB: 350-353; ATE: 460-463 |

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| STANDARD | Correlation: Must address both the standards and the curriculum framework. Use page number and ATE for Annotated Teacher Edition or CT for Core Technology. (Identify no more than 8 correlations.) |
| ES.6 The student will investigate and understand that resource use is complex. Key ideas include | |
| a) global resource use has environmental liabilities and benefits; | Ch 5 – Global Climate SB: 124-135; ATE: 169-180 Ch 15 – Mineral Resources 447-456; ATE: 589-601 Ch 16 – Energy Resources SB: 461-467, 479-484; ATE: 611-613, 631-637 |
| b) availability, renewal rates, and economic effects are considerations when using resources; | Ch 15 – Mineral Resources SB: 433-444; ATE: 576-586 Ch 16 – Energy Resources SB: 461-467; ATE: 611-613 |
| c) use of Virginia resources has an effect on the environment and the economy; and | Local standard, not addressed |
| d) all energy sources have environmental and economic effects. | Ch 5 – Global Climate SB: 124-135; ATE: 169-180 Ch 16 – Energy Resources SB: 461-467, 479-484; ATE: 611-613, 631-637 |

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| ES.7 The student will investigate and understand that plate tectonic theory explains Earth’s internal and external geologic processes. Key ideas include | |
| a) convection currents in Earth’s interior lead to the movement of plates and influence the distribution of materials in Earth’s layers, and may impact the magnetic field; | Ch 9 – Exploring Earth’s Interior SB: 241-245; ATE: 319-325 Ch 12 – Divergent Boundaries SB: 342-345; ATE: 449-451 |
| b) features and processes occur within plates and at plate boundaries; | Ch 10 – Earthquakes and Transform Boundaries SB: 250-288; ATE: 330-374 Ch 11 – Subduction-Zone Volcanoes SB: 289-328; ATE: 375-428 Ch 12 – Divergent Boundaries SB: 329-356; ATE: 429-466 |
| c) interaction between tectonic plates causes the development of mountain ranges and ocean basins; and | Ch 11 – Subduction-Zone Volcanoes SB: 293-295, 317-322; ATE: 388-391, 416-421 Ch 12 – Divergent Boundaries SB: 342-352; ATE: 449-463 |
| d) evidence of geologic processes is found in Virginia’s geologic landscape. | Local standard, not addressed |

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| ES.8 The student will investigate and understand that freshwater resources influence and are influenced by geologic processes and human activity. Key ideas include | |
| a) water influences geologic processes including soil development and karst topography; | Ch 13 – Sedimentary Processes in a Delta SB: 358-394; ATE: 468-518 |
| b) the nature of materials in the subsurface affect the water table and future availability of fresh water; | Ch 2 – Seeking Water From Earth SB: 28-45; ATE: 44-60 |
| c) weather and human usage affect freshwater resources, including water locations, quality, and supply; and | Ch 2 – Seeking Water From Earth SB: 14-50; ATE: 20-66 |
| d) stream processes and dynamics affect the major watershed systems in Virginia, including the Chesapeake Bay and its tributaries. | Local standard, not addressed |

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| ES.9 The student will investigate and understand that many aspects of the history and evolution of Earth and life can be inferred by studying rocks and fossils. Key ideas include | |
| a) traces and remains of ancient, often extinct, life are preserved by various means in sedimentary rocks; | Ch 6 – Climate Change in Earth’s History SB: 149-154; ATE: 204-209 |
| b) superposition, cross-cutting relationships, index fossils, and radioactive decay are methods of dating rocks and Earth events and processes; | Ch 8 – Solar System Origins SB: 197-199; ATE: 261-263 Ch 14 – Building Earth’s Crust SB: 423-426; ATE: 556-560 |
| c) absolute (radiometric) and relative dating have different applications but can be used together to determine the age of rocks and structures; and | Ch 8 – Solar System Origins SB: 197-199; ATE: 261-263 Ch 14 – Building Earth’s Crust SB: 423-426; ATE: 556-560 |
| d) rocks and fossils from many different geologic periods and epochs are found in Virginia. | Local standard, not addressed |

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| STANDARD | Correlation: Must address both the standards and the curriculum framework. Use page number and ATE for Annotated Teacher Edition or CT for Core Technology. (Identify no more than 8 correlations.) |
| ES.10 The student will investigate and understand that oceans are complex, dynamic systems and are subject to long- and short-term variations. Key ideas include | |
| a) chemical, biological, and physical changes affect the oceans; | Ch 3 – Ocean Currents SB: 51-78; ATE: 67-106 |
| b) environmental and geologic occurrences affect ocean dynamics; | Ch 3 – Ocean Currents SB: 51-78; ATE: 67-106 |
| c) unevenly distributed heat in the oceans drives much of Earth’s weather; | Ch 3 – Ocean Currents SB: 66-76; ATE: 91-103 Ch 4 – Regional Climate SB: 102-103; ATE: 138-140 |
| d) features of the sea floor reflect tectonic and other geological processes; and | Ch 12 – Divergent Boundaries SB: 333-353; ATE: 439-463 |

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e) human actions, including economic and public policy issues, affect oceans and the coastal zone including the Chesapeake Bay.

Chapter 6: Climate Change

SB: 169-170, 172; ATE 225-228, 230-231

Chapter 13: Mississippi Blues

SB 387-390; ATE 506-512

Chesapeake Bay not addressed

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| STANDARD | Correlation: Must address both the standards and the curriculum framework. Use page number and ATE for Annotated Teacher Edition or CT for Core Technology. (Identify no more than 8 correlations.) |
| ES.11 The student will investigate and understand that the atmosphere is a complex, dynamic system and is subject to long-and short-term variations. Key ideas include | |
| a) the composition of the atmosphere is critical to most forms of life; | Ch 1 – Comparing Earth to Other Worlds SB: 6-9; ATE: 10-13 Ch 14 – Building Earth’s Crust SB: 425-426; ATE: 569-560 |
| b) biologic and geologic interactions over long and short time spans change the atmospheric composition; | Ch 5 – Global Climate SB: 127-138; ATE: 172-185 |
| c) natural events and human actions may stress atmospheric regulation mechanisms; and | Ch 5 – Global Climate SB: 127-138; ATE: 172-185 Ch 6 – Climate Change in Earth’s History 160-180; ATE: 216-238 |
| d) human actions, including economic and policy decisions, affect the atmosphere. | Ch 5 – Global Climate SB: 124-138; ATE: 169-185 Ch 6 – Climate Change in Earth’s History SB: 165-180; ATE: 220-238 |

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| ES.12 The student will investigate and understand that Earth’s weather and climate are the result of the interaction of the sun’s energy with the atmosphere, oceans, and the land. Key ideas include | |
| a) weather involves the reflection, absorption, storage, and redistribution of energy over short to medium time spans; | Ch 4 – Regional Climate SB: 97-103; ATE: 132-140 Ch 5 – Global Climate SB: 115-123; ATE: 160-169 |
| b) weather patterns can be predicted based on changes in current conditions; | |
| c) extreme imbalances in energy distribution in the oceans, atmosphere, and the land may lead to severe weather conditions; | |
| d) models based on current conditions are used to predict weather phenomena; and | |

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e) changes in the atmosphere and the oceans due to natural and human activity affect global climate.

Ch 5 – Global Climate

SB: 124-138; ATE: 169-185

Ch 6 – Climate Change in Earth’s History

SB: 165-180; ATE: 220-238