Layered Earth Geology Correlations
For Texas State Science Standards

Middle School: Grades 5-8		**Lesson Plans**
§112.16. Science, Grade 5		
(7)	**Earth and space. The student knows Earth's surface is constantly changing and consists of useful resources. The student is expected to:**	**C2-3, D1-4**
(A)	Explore the processes that led to the formation of sedimentary rocks and fossil fuels	C2-3
(B)	Recognize how landforms such as deltas, canyons, and sand dunes are the result of changes to Earth's surface by wind, water, and ice	D1-4
§112.18. Science, Grade 6		
(10)	**Earth and space. The student understands the structure of Earth, the rock cycle, and plate tectonics. The student is expected to:**	**A2, B3, C2-3, D1, E1, F1**
(A)	Build a model to illustrate the structural layers of Earth, including the inner core, outer core, mantle, crust, asthenosphere, and lithosphere	A2
(B)	Classify rocks as metamorphic, igneous, or sedimentary by the processes of their formation	C2-3
(C)	Identify the major tectonic plates, including Eurasian, African, Indo-Australian, Pacific, North American, and South American	B3
(D)	Describe how plate tectonics causes major geological events such as ocean basins, earthquakes, volcanic eruptions, and mountain building	B3, D1, E1, F1
§112.19. Science, Grade 7		
(8)	**Earth and Space. The student knows that natural events and human activity can impact Earth systems. The student is expected to:**	**D1-4**
(B)	Analyze the effects of weathering, erosion, and deposition on the environment in ecoregions of Texas	D1-4
§112.20. Science, Grade 8		
(9)	**Earth and Space. The student knows that natural events can impact Earth systems. The student is expected to:**	**B1-3, C4, D1-4**
(A)	Describe the historical development of evidence that supports plate tectonic theory	B1-3
(B)	Relate plate tectonics to the formation of crustal features	B3
(C)	Interpret topographic maps and satellite views to identify land and erosional features and predict how these features may be reshaped by weathering	C4, D1-4

§112.36. Earth and Space Science		
(7)	**Earth in space and time. The student knows that scientific dating methods of fossils and rock sequences are used to construct a chronology of Earth's history expressed in the geologic time scale. The student is expected to:**	**G1-2**
(A)	Evaluate relative dating methods using original horizontality, rock superposition, lateral continuity, cross-cutting relationships, unconformities, index fossils, and biozones based on fossil succession to determine chronological order	G1
(B)	Calculate the ages of igneous rocks from Earth and the Moon and meteorites using radiometric dating methods	G1
(C)	Understand how multiple dating methods are used to construct the geologic time scale, which represents Earth's approximate 4.6-billion-year history	G1-2
(8)	**Earth in space and time. The student knows that fossils provide evidence for geological and biological evolution. Students are expected to:**	**G3**
(C)	Evaluate the significance of the terminal Permian and Cretaceous mass extinction events, including adaptive radiations of organisms after the events.	G3
(9)	**Solid Earth. The student knows Earth's interior is differentiated chemically, physically, and thermally. The student is expected to:**	**A1-2, B3, F1**
(A)	Evaluate heat transfer through Earth's subsystems by radiation, convection, and conduction and include its role in plate tectonics, volcanism, ocean circulation, weather, and climate	A2, B3, F1
(B)	Examine the chemical, physical, and thermal structure of Earth's crust, mantle, and core, including the lithosphere and asthenosphere	A1-2
(10)	**Solid Earth. The student knows that plate tectonics is the global mechanism for major geologic processes and that heat transfer, governed by the principles of thermodynamics, is the driving force. The student is expected to:**	**A2, B2-3, D1, E1, F1, G3-4**
(A)	Investigate how new conceptual interpretations of data and innovative geophysical technologies led to the current theory of plate tectonics	B3
(B)	Describe how heat and rock composition affect density within Earth's interior and how density influences the development and motion of Earth's tectonic plates	A2, B3
(C)	Explain how plate tectonics accounts for geologic processes and features, including sea floor spreading, ocean ridges and rift valleys, subduction zones, earthquakes, volcanoes, mountain ranges, hot spots, and hydrothermal vents	B2-3, D1, E1, F1

(E)	Distinguish the location, type, and relative motion of convergent, divergent, and transform plate boundaries using evidence from the distribution of earthquakes and volcanoes	B3, E1, F1
(F)	Evaluate the role of plate tectonics with respect to long-term global changes in Earth's subsystems such as continental buildup, glaciation, sea level fluctuations, mass extinctions, and climate change	G3-4
(11)	**Solid Earth. The student knows that the geosphere continuously changes over a range of time scales involving dynamic and complex interactions among Earth's subsystems. The student is expected to:**	**B1, B3, D1-4, E5, F3**
(A)	Compare the roles of erosion and deposition through the actions of water, wind, ice, gravity, and igneous activity by lava in constantly reshaping Earth's surface	D1-4
(B)	Explain how plate tectonics accounts for geologic surface processes and features, including folds, faults, sedimentary basin formation, mountain building, and continental accretion	D1, B3
(C)	Analyze changes in continental plate configurations such as Pangaea and their impact on the biosphere, atmosphere, and hydrosphere through time	B1
(E)	Evaluate the impact of changes in Earth's subsystems on humans such as earthquakes, tsunamis, volcanic eruptions, hurricanes, flooding, and storm surges and the impact of humans on Earth's subsystems such as population growth, fossil fuel burning, and use of fresh water	E5, F3