Layered Earth Geology Correlations For California State Science Standards

Middle School: Grades 5-8		**Lesson Plans**
1.	**Plate tectonics accounts for important features of Earth's surface and major geologic events**	
a.	Evidence of plate tectonics is derived from the fit of the continents; the location of earthquakes, volcanoes, and mid-ocean ridges; and the distribution of fossils, rock types, and ancient climatic zones	B1-3, E1, F1
b.	Earth is composed of several layers; a cold, brittle lithosphere; a hot convecting mantle; and a dense metallic core	A2
c.	Lithospheric plates; the size of continents and oceans move at rates of centimeters per year in response to movements in the mantle.	A2, B3
d.	Earthquakes are sudden motions along breaks in the crust called faults and that volcanoes and fissures are locations where magma reaches the surface	E1, F1
e.	Major geological events, such as earthquakes, volcanic eruptions, and mountain building, result from plate motions	D1, E1, F1
f.	Explain major features of California geology including mountains, faults, and volcanoes in terms of plate tectonics	D1, E1, F1
g.	Determine the epicenter of an earthquake and know that the effects of an earthquake on any region vary, depending on the size of the earthquake, the distance of the region from the epicenter, the local geology, and the type of construction in the region	E3
2.	**Topography is reshaped by the weathering of rock and soil and by the transportation and deposition of sediment.**	
a.	Water running downhill is the dominant process in shaping the landscape, including California's landscape.	D3
b.	Rivers and streams are dynamic systems that erode, transport sediment, change course, and flood their banks in natural and recurring patterns	D3
d.	Earthquakes, volcanic eruptions, landslides, and floods change human wildlife habitats	E5, F3
4.	**Evidence from rocks allows us to understand the evolution of life on Earth.**	
a.	Earth processes today are similar to those that occurred in the past and slow geologic processes have large cumulative effects over long periods of time	G1-2
b.	The history of life on Earth has been disrupted by major catastrophic events, such as major volcanic eruptions or the impacts of asteroids	G3
c.	The rock cycle includes formation of new sediment and rocks and rocks are often found in layers with the oldest generally on the bottom	C1-4

d.	Evidence from geologic layers and radioactive dating indicates Earth is approximately 4.6 billion years old and that life on this planet has existed for more than 3 billion years	G1-2
e.	Fossils provide evidence of how life and environmental conditions have changed	B1-4
f.	Movements of Earth's continental and oceanic plates through time, with associated changes in climate and geographic connections, have affected the past and present distribution of organisms	B1
g.	Explain significant developments and extinctions of plant and animal life on the geological time scale	G2

High School: Grades 9-12		**Lesson Plans**
3.	**Plate tectonics operating over geologic time has changed patterns of land, sea, and mountains on Earth's surface.**	
a.	a. Features of the ocean floor provide evidence for plate tectonics	B2
b.	b. Know the principal structures that form at the three different kinds of plate boundaries	B3
c.	c. Explain the properties of rocks based on the physical and chemical conditions of which they formed, including plate tectonic processes	C1-4
d.	d. Know why and how earthquakes occur and the scales used to measure their intensity and magnitude	E1, E3
e.	e. There are different kinds of volcanoes	F2
f.	f. Location and properties of volcanoes are due to hot spots and/or subduction	F1-3