



**Correlation**  
for  
***Science of Earth Systems, 2E***

by  
**Stephen D. Butz**  
**Textbook ISBN 1-4180-4122-X**  
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**Using the**  
**National Science Education Standards**  
for  
**Earth and Space Science**

Correlation ISBN: 1-4283-6077-8

**CORRELATION USING NATIONAL SCIENCE EDUCATION STANDARDS FOR EARTH AND SPACE SCIENCE**

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**PUBLISHER: THOMSON DELMAR LEARNING**

<b>STANDARDS</b>	<b>CORRELATION</b>
<b>LITHOSPHERE</b>	
<b>Lithospheric Materials</b>	
<b>1. Develop an understanding of lithospheric materials, processes, changes and uses</b>	
a. Students analyze the dependence of physical properties of minerals on the arrangement and bonding of their atoms.	P. 149-151
b. Students classify three major groups of rocks according to origin, texture, mineral composition and formation processes	P. 152-161
c. Students explore earth's finite rock, mineral, fossil fuel and other natural resources	P. 164-169
d. Students analyze the importance of soils: soil use, conservation, products land use capabilities of major soil types	P. 244-255
e. Students evaluate geographic hazards: volcanoes, earthquakes, mass wasting and flooding	P. 203-218, 230-231
f. Students interpret topographic, soil, and geologic maps to locate and identify soil and rock types; identify erosion and deposit landforms; evaluate landforms resulting from tectonic activity.	P. 62-63, 192, 227-233, 250-253
<b>Tectonic Processes</b>	
<b>2. Develop an understanding of tectonic processes</b>	
a. Students analyze evidence for Theory of Plate Tectonics development: propelling forces, plate boundary interactions, sea floor features.	P. 190-197
b. Students evaluate forces that propel tectonic plates	P. 184-186, 191-197
c. Students analyze the model of the earth's interior resulting from the study of earthquake waves.	P. 184
d. Students analyze the nature, epicenter and magnitude of earthquakes: folds, faults, levels of global seismic activity	P. 204-209
<b>ORIGIN AND EVOLUTION OF THE EARTH SYSTEM</b>	
<b>Geologic Past</b>	
<b>1. Interpret the order and impact of events in earth's geologic past</b>	
a. Students will interpret origins of the earth system	P. 112-125
b. Students interpret origins of life	P. 260-268

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<b>STANDARDS</b>	<b>CORRELATION</b>
c. Students analyze relative and absolute dating techniques	P. 260-265
d. Students analyze statistical models of radioactive decay	P. 263-265
e. Students analyze diversity of life through time	P. 260-282
f. Students analyze fossils	P. 263, 268-282, 284-285
g. Students analyze the evolution and extinction of species	P. 260-287
<b>Global Geological History</b>	
<b>4. Assess major geologic events and paleoclimatic changes</b>	
a. Students interpret Uniformitarianism.	P. 260
b. Students interpret unconformities	P. 260
c. Students interpret Stratigraphic principles	P. 260-265
d. Students interpret floral and faunal succession	P. 266-267, 640-645
<b>HYDROSPHERE</b>	
<b>Hydropheic Influcence on Lithosphere</b>	
<b>1. Evaluate stream erosion and depositional processes</b>	
a. Students analyze landforms resulting form natural erosion, deposition, and mass wasting.	P. 230-231
b. Students analyze the formation of stream channels: down cutting, lateral erosion and transportation	P. 228-229
c. Students know the nature and characteristics of sediments	P. 227-233
d. Students know how the ability of running water to sort sediments	P. 233
<b>2. Analyze water beneath the earth's surface</b>	
a. Students know water storage and movement	P. 509-513
b. Students analyze the environmental impact of human population growth, building and development.	P. 514, 536-545
c. Students evaluate causes for natural manmade and contamination	P. 514, 536-545
<b>Surface Water</b>	
<b>1. Analyze mechanisms for generating ocean currents</b>	
a. Students know the effect of temperature.	P. 484-485

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STANDARDS	CORRELATION
b. Students know the effect of deep ocean circulation	P. 486
c. Students know the effect of salinity	P. 484-485
d. Students know the effect of planetary wind belts.	P. 358-362
<b>2. Analyze mechanisms that produce shorelines and resulting landforms</b>	
e. Students know the nature of underlying geology.	P. 490, 499, 504-505
f. Students know long and short term sea-level history.	P. 528
g. Students know adjacent topography	P. 485, 498, 503-505
<b>3. Evaluate environmental and ecological issues</b>	
a. Students know carbon sink	P. 627
b. Students know largest watershed.	P. 502-504
c. Students know climate control	P. 484-486, 550-557
d. Students evaluate upwelling in oceans	P. 484-485
<b>ATMOSPHERE</b>	
<b>Composition</b>	
<b>1. Analyze the formation of the atmosphere</b>	
a. Students know formation of atmosphere and hydrosphere – out-gassing.	P. 294-299
<b>2. Analyze the structure of the atmosphere</b>	
a. Students know temperature.	P. 318-323
b. Students know pressure.	P. 324-330
c. Students know water vapor.	P. 336-337
d. Students know atmospheric transparency	P. 336-337
<b>Weather Systems</b>	
<b>3. Analyze weather systems</b>	
a. Students know humidity.	P. 336-341
b. Students know cloud formation	P. 342-348
c. Students know precipitation.	P. 348-351

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STANDARDS	CORRELATION
<b>4. Analyze atmospheric pressure</b>	
a. Students know planetary winds.	P. 358-362
b. Students know pressure cells.	P. 358-364
c. Students know altitude	P. 367-368
d. Students know local breezes.	P. 366-367
<b>4. Analyze air masses and weather systems</b>	
a. Students know air masses.	P. 370-372
b. Students know frontal systems.	P. 372-376
c. Students know how hazardous weather	P. 384-392
d. Students know warning systems and their effectiveness	P. 394-398
<b>5. Evaluate meteorological observing, analysis and prediction</b>	
a. Students know worldwide observing systems	P. 394-398
b. Students know meteorological data depiction	P. 393-395
<b>6. Analyze the effect of human activity on the weather and climate</b>	P. 410-416
<b>THE SOLAR SYSTEM</b>	
<b>Earth's position in the solar system</b>	
<b>1. Analyze the formation of the solar system.</b>	P. 112
<b>2. Analyze planetary motion and the physical laws that govern that motion.</b>	
a. Students know rotation and revolution	P. 58, 67
b. Students know apparent diurnal motions of the sun and other stars	P. 64-65
c. Students know the tilt and parallelism of earth's axis.	P. 58-59
<b>Instrumentation</b>	
<b>1. Evaluate instruments used by astronomers</b>	
a. Students know use of optical telescopes	P. 72
b. Students know use of radio telescopes	P. 74
c. Students know use of spectroscopes	P. 74

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STANDARDS	CORRELATION
d. Students know use of cameras	P. 73
<b>Scientific Theories and Principles of Astronomy</b>	
<b>1. Evaluate current scientific theories and principles</b>	
a. Students know current scientific theories of the origins of the universe	P. 55-56, 65-66, 84-88, 96, 106, 112, 130-131
b. Students analyze the sources of stellar energy	P. 96
c. Students analyze Doppler effect and red and blue shifts	P. 132-133
d. Students know Hubble’s Law and the concept of an every expanding universe.	P. 73, 127, 132-135
e. Students know the life cycle of stars in the Hertzsprung-Russell Diagram	P. 96-97
<b>STEWARDSHIP OF THE EARTH</b>	
<b>Alternative Choices for Human Societies</b>	
<b>1. Evaluate the relationship between technological advances and stress on the environment.</b>	P. 230-244, 445-447, 536-544, 619-623
<b>2. Evaluate the interdependence of the natural resources – land, air, and water.</b>	P. 576-577
<b>3. Analyze population growth, economic progress as they relate to environmental stewardship.</b>	P. 445-448, 536-544, 576-580, 619-623



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