



Correlation
for
Science of Earth Systems, 2E

by
Stephen D. Butz
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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

TITLE: SCIENCE OF EARTH SYSTEMS, 2/E, BY STEPHEN BUTZ, © 2008, TEXT ISBN: 141804122X

PUBLISHER: THOMSON DELMAR LEARNING

STANDARDS	CORRELATION
LITHOSPHERE	
Lithospheric Materials	
1. Develop an understanding of lithospheric materials, processes, changes and uses	
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
Tectonic Processes	
2. Develop an understanding of tectonic processes	
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
ORIGIN AND EVOLUTION OF THE EARTH SYSTEM	
Geologic Past	
1. Interpret the order and impact of events in earth's geologic past	
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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STANDARDS	CORRELATION
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
Global Geological History	
4. Assess major geologic events and paleoclimatic changes	
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
HYDROSPHERE	
Hydropheic Influcence on Lithosphere	
1. Evaluate stream erosion and depositional processes	
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
2. Analyze water beneath the earth's surface	
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
Surface Water	
1. Analyze mechanisms for generating ocean currents	
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
2. Analyze mechanisms that produce shorelines and resulting landforms	
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
3. Evaluate environmental and ecological issues	
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
ATMOSPHERE	
Composition	
1. Analyze the formation of the atmosphere	
a. Students know formation of atmosphere and hydrosphere – out-gassing.	P. 294-299
2. Analyze the structure of the atmosphere	
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
Weather Systems	
3. Analyze weather systems	
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
4. Analyze atmospheric pressure	
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
4. Analyze air masses and weather systems	
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
5. Evaluate meteorological observing, analysis and prediction	
a. Students know worldwide observing systems	P. 394-398
b. Students know meteorological data depiction	P. 393-395
6. Analyze the effect of human activity on the weather and climate	P. 410-416
THE SOLAR SYSTEM	
Earth's position in the solar system	
1. Analyze the formation of the solar system.	P. 112
2. Analyze planetary motion and the physical laws that govern that motion.	
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
Instrumentation	
1. Evaluate instruments used by astronomers	
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
Scientific Theories and Principles of Astronomy	
1. Evaluate current scientific theories and principles	
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
STEWARDSHIP OF THE EARTH	
Alternative Choices for Human Societies	
1. Evaluate the relationship between technological advances and stress on the environment.	P. 230-244, 445-447, 536-544, 619-623
2. Evaluate the interdependence of the natural resources – land, air, and water.	P. 576-577
3. Analyze population growth, economic progress as they relate to environmental stewardship.	P. 445-448, 536-544, 576-580, 619-623



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