



ENVIRONMENTAL SCIENCE

A Study of Interrelationships

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STANDARDS	PAGE REFERENCES
Environmental Science	
<p>Course Description Environmental Science is a laboratory course that enables students to develop an understanding of the natural and human-made environment and the environmental problems that the world faces. Students explore environmental science concepts through an inquiry approach.</p>	
Embedded Inquiry	
<p>Conceptual Strand <i>Understandings about scientific inquiry and the ability to conduct inquiry are essential for living in the 21st century.</i></p>	
<p>CLE 3260.Inq.1 Recognize that science is a progressive endeavor that reevaluates and extends what is already accepted.</p>	<p>Student Edition: 2, 62-67, 378-388, 431-435, 451-452 <i>Figure 4.1</i> 63 <i>Critical Thinking Questions</i> 77 <i>Global Perspective</i> 388 <i>Case Study</i> 18.4 425</p>
<p>CLE 3260.Inq.2 Design and conduct scientific investigations to explore new phenomena, verify previous results, test how well a theory predicts, and compare opposing theories.</p>	<p>Student Edition: 62-65 <i>Experience This</i> 59, 77, 310, 365, 394 <i>Figure 4.1</i> 63 <i>Critical Thinking Questions</i> 77, 105</p>

STANDARDS	PAGE REFERENCES
CLE 3260.Inq.3 Use appropriate tools and technology to collect precise and accurate data.	Student Edition: 63-64 <i>Critical Thinking Questions</i> 77, 105 <i>Experience This</i> 77, 365, 394
CLE 3260.Inq.4 Apply qualitative and quantitative measures to analyze data and draw conclusions that are free of bias.	Student Edition: 62-67 <i>Experience This</i> 59, 365 <i>What's Your Take?</i> 77 <i>Review Questions</i> 105 <i>Critical Thinking Questions</i> 105 <i>Issues & Analysis</i> 262, 364 <i>Case Study</i> 13.3 306-307
CLE 3260.Inq.5 Compare experimental evidence and conclusions with those drawn by others about the same testable question.	Student Edition: 64-65 <i>Critical Thinking</i> xxiv <i>Critical Thinking Questions</i> 77
CLE 3260.Inq.6 Communicate and defend scientific findings.	Student Edition: 65 <i>What's Your Take?</i> 12, 410 <i>Global Perspective</i> 18 <i>Case Study</i> 3.3 44-45 <i>Issues & Analysis</i> 133, 229, 262 <i>Critical Thinking Questions</i> 135, 429
Embedded Technology and Engineering	
Conceptual Strand <i>Society benefits when engineers apply scientific discoveries to design materials and processes that develop into enabling technologies.</i>	
CLE 3260.T/E.1 Explore the impact of technology on social, political, and economic systems.	Student Edition: 47-58, 192-206, 209-228 <i>Global Perspective</i> 103, 221 <i>Case Study</i> 9.2 205
CLE 3260.T/E.2 Differentiate among elements of the engineering design cycle: design constraints, model building, testing, evaluating, modifying, and retesting.	Student Edition: 209-228 <i>Critical Thinking Questions</i> 11 <i>Issues & Analysis</i> 206
CLE 3260.T/E.3 Explain the relationship between the properties of a material and the use of the material in the application of a technology.	Student Edition: 200-205, 209-228 <i>Issues & Analysis</i> 206

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CLE 3260.T/E.4 Describe the dynamic interplay among science, technology, and engineering within living, earth-space, and physical systems.	Student Edition: 190-204, 209-228 <i>Case Study 18.4</i> 425
Standard 1 – Earth Systems	
Conceptual Strand 1 <i>Abiotic factors exert a profound influence on the global ecosystem.</i>	
CLE 3260.1.1 Explain how earth's position in the solar system creates global climate patterns.	Student Edition: 79-80
CLE 3260.1.2 Use the theory of plate tectonics to explain the occurrence of earthquakes, volcanoes, and tsunamis.	Student Edition: 289-290
CLE 3260.1.3 Explain the rock cycle and its association with soil formation.	Student Edition: 290-299
CLE 3260.1.4 Relate the atmosphere, hydrosphere and lithosphere to the biosphere.	Student Edition: 97-105, 112-134, 240-247, 292, 336-339, 377-378, 387 <i>Global Perspective</i> 420
Standard 2 – The Living World	
Conceptual Strand 2 <i>The global ecosystem involves interactions between biotic and abiotic factors.</i>	
CLE 3260.2.1 Employ the first and second laws of thermodynamics to explain energy flow within ecosystems.	Student Edition: 74-75
CLE 3260.2.2 Discuss the roles of biodiversity and coevolution in ecosystems.	Student Edition: 87-88, 95-97, 232-263 <i>Issues & Analysis</i> 133 <i>Global Perspective</i> 237, 238 <i>Review Questions</i> 238, 263 <i>Critical Thinking Questions</i> 263 <i>Experience This</i> 263
CLE 3260.2.3 Using temperature, latitude and altitude, infer the types of animal and plant life found in each of earth's major biomes.	Student Edition: 112-135 <i>Global Perspective</i> 122 <i>Case Study 6.2</i> 124 <i>Figure 6.20</i> 129 <i>Review Questions</i> 134 <i>Critical Thinking Questions</i> 135

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<p>CLE 3260.2.4 Distinguish between primary and secondary biological succession using common plants and animals.</p>	<p>Student Edition: 107-111 <i>Figure 6.3</i> 109 <i>Case Study 6.1</i> 120 <i>Review Questions</i> 134 <i>Critical Thinking Questions</i> 135</p>
<p>CLE 3260.2.5 Explain biogeochemical cycling in ecosystems.</p>	<p>Student Edition: 97-105, 337-338 <i>Figure 5.29</i> 99 <i>Figure 5.30</i> 101 <i>Review Questions</i> 105</p>
<p>Standard 3 – Human Population</p>	
<p>Conceptual Strand 3 <i>Worldwide, human population is growing exponentially.</i></p>	
<p>CLE 3260.3.1 Demonstrate how human population growth over time has been affected by improved food production, healthcare, sanitation and industrial advances.</p>	<p>Student Edition: 137-159 <i>Case Study 7.4</i> 162 <i>Review Questions</i> 165</p>
<p>CLE 3260.3.2 Research demographics and economic status of different countries to infer ecological and economic consequences of human population growth.</p>	<p>Student Edition: 137-159 <i>Table 7.2</i> 149 <i>Case Study 7.3</i> 161 <i>Critical Thinking Questions</i> 165 <i>Global Perspective</i> 267 <i>Issues & Analysis</i> 309</p>
<p>CLE 3260.3.3 Explain how social and economic factors affect the fertility rate and life expectancy of the human population.</p>	<p>Student Edition: 137-159 <i>Global Perspective</i> 148 <i>Case Study 7.3</i> 161 <i>Review Questions</i> 165</p>

STANDARDS	PAGE REFERENCES
Standard 4 – Water and Land Resources	
Conceptual Strand 4 <i>Humans use natural resources in a variety of ways.</i>	
CLE 3260.4.1 Examine common resource use practices in agriculture, forestry, urban/suburban development, mining, and fishing.	Student Edition: 183-190, 264-286, 312-332 <i>Case Study 3.3</i> 44-45 <i>Case Study 9.1</i> 189 <i>Case Study 9.2</i> 205 <i>Case Study 12.1</i> 275 <i>Issues & Analysis</i> 285 <i>Review Questions</i> 287 <i>Global Perspective</i> 330-331
CLE 3260.4.2 Explore best management practices related to water and soil resources.	Student Edition: 190-194, 299-305, 336-365 <i>Case Study 9.2</i> 205 <i>Case Study 13.2</i> 302 <i>Case Study 13.3</i> 306-307 <i>Case Study 15.2</i> 345 <i>Global Perspective</i> 351 <i>Case Study 15.3</i> 356
CLE 3260.4.3 Compare and contrast preservation and conservation.	Student Edition: 19-21, 202-203, 253-256, 299-305, 361 <i>Case Study 2.1</i> 20 <i>Case Study 2.2</i> 22 <i>Critical Thinking Questions</i> 35 <i>Case Study 12.2</i> 276 <i>Case Study 14.4</i> 326 <i>Review Questions</i> 395
CLE 3260.4.4 Evaluate the impact of human activities on natural resources.	Student Edition: 183-204, 218-220, 270-274, 297-309, 347-365, 367-394 <i>Global Perspective</i> 171, 221, 254, 308, 319, 362-363, 388 <i>Case Study 12.1</i> 275 <i>Case Study 13.1</i> 301

STANDARDS	PAGE REFERENCES
Standard 5 – Energy Resources and Consumption	
Conceptual Strand 5 <i>Humans use both renewable and nonrenewable sources of energy.</i>	
CLE 3260.5.1 Compare and contrast various energy resources.	Student Edition: 167-177, 180-204, 209-230 <i>Global Perspective</i> 171 <i>Critical Thinking Questions</i> 207 <i>Experience This</i> 207, 230 <i>Review Questions</i> 207, 231 <i>Issues & Analysis</i> 229
CLE 3260.5.2 Analyze the past and present use of energy resources.	Student Edition: 167-177, 180-204 <i>Global Perspective</i> 170, 171, 193 <i>Issues & Analysis</i> 177 <i>Review Questions</i> 178 <i>Case Study 9.2</i> 205 <i>Critical Thinking Questions</i> 207
CLE 3260.5.3 Predict future trends in energy resource use.	Student Edition: 175-176, 190-204, 227-228 <i>Critical Thinking Questions</i> 178, 207, 231 <i>Table 9.3</i> 204 <i>Issues & Analysis</i> 206, 229
Standard 6 – Waste Production and Pollution	
Conceptual Strand 6 <i>Many human activities result in pollution.</i>	
CLE 3260.6.1 Investigate the causes, environmental effects, and methods for controlling/preventing land, air and water pollution.	Student Edition: 4-10, 184-189, 218-226, 347-365, 367-393, 404-408, 412-428 <i>Global Perspectives</i> 11, 53, 221, 319, 362-363, 370, 385, 420
CLE 3260.6.2 Apply case studies to relate land, air, and water pollution to human health issues.	Student Edition: 220-221, 323-324, 368-375, 384-386, 389-393, 418 <i>Global Perspective</i> 27, 420 <i>Case Study 5.2</i> 100 <i>Issues & Analysis</i> 364 <i>Table 16.4</i> 390 <i>Case Study 18.1</i> 416

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<p>CLE 3260.6.3 Explore methods used for remediation of land, air and water pollution.</p>	<p>Student Edition: 299-305, 325-333, 354-361, 375-376, 387-388, 404-408, 422-425, 431-453 <i>Case Study 15.3</i> 356 <i>Global Perspective</i> 370 <i>Table 16.3</i> 389 <i>Case Study 18.4</i> 425</p>
<p>CLE 3260.6.4 Research local and national environmental legislation related to protecting land, air and water resources.</p>	<p>Student Edition: 4, 283-285, 327-332, 361, 375-376, 431-444 <i>Case Study 1.2</i> 7 <i>Case Study 6.2</i> 124 <i>Issues & Analysis</i> 285 <i>Case Study 13.2</i> 302 <i>Case Study 15.3</i> 356</p>
<p>CLE 3260.6.5 Research local and state methods used for solid waste reduction, recycling and disposal; compare them to methods used in other developed countries.</p>	<p>Student Edition: 397-410, 412-428 <i>Case Study 17.1</i> 403 <i>Case Study 17.2</i> 407 <i>Case Study 17.3</i> 408 <i>Review Questions</i> 410 <i>Critical Thinking Questions</i> 410, 429 <i>Global Perspective</i> 426 <i>What's Your Take?</i> 429</p>
<p>Standard 7 – Global Change and Civic Responsibility</p>	
<p>Conceptual Strand 7 <i>Human interaction with the local environment has global consequences.</i></p>	
<p>CLE 3260.7.1 Explain how consumer choices in Tennessee impact jobs, resources, pollution and waste here and around the world.</p>	<p>Student Edition: 10, 30, 312-332 <i>Experience This</i> 12, 207, 286, 334 <i>Review Questions</i> 13 <i>Case Study 13.3</i> 306-307 <i>Issues & Analysis</i> 333, 393, 453 <i>Critical Thinking Questions</i> 334, 395</p>

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<p>CLE 3260.7.2 Compare and contrast methods used by various governments to protect biodiversity.</p>	<p>Student Edition: 4, 253-263 <i>Case Study 1.1</i> 3 <i>Case Study 1.2</i> 7 <i>Global Perspective</i> 18, 254 <i>Case Study 5.1</i> 84 <i>Case Study 7.2</i> 160 <i>Issues & Analysis</i> 163 <i>Case Study 11.1</i> 253 <i>Case Study 11.3</i> 261 <i>Review Questions</i> 263</p>
<p>CLE 3260.7.3 Explain how human activity is related to ozone depletion and climate change.</p>	<p>Student Edition: 378-388 <i>Table 16.2</i> 382 <i>Global Perspective</i> 385 <i>Table 16.3</i> 389 <i>Critical Thinking Questions</i> 395 <i>Review Questions</i> 395</p>
<p>CLE 3260.7.4 Summarize the scientific explanation for average global temperature increase.</p>	<p>Student Edition: 380-388 <i>Figure 16.16</i> 381 <i>Global Perspective</i> 388</p>