

The following is the course syllabus for **Environmental Science-103 and Biology-103**

Environmental Science-103 course is the study of the interactions among living things. It focuses on conservation, protection of natural resources, ecological education, communication, and environmental research. It is an applied science using the principles of Chemistry, Physics, and Biology to help achieve practical goals such as identifying and solving environmental problems. During this course, students will develop an appreciation for their role in the world as a living, breathing, waste-producing organism. This course will also help students develop a sense of responsibility for their actions and recognize that their actions have a global impact.

The Ecosystem Dynamics standard (H.B.6) from Biology 1 CP will be used as a basis for this course, but not limited to its scope and sequence.

Biology-103 will follow this course during the spring semester and includes the study of the cell, the molecular basis of heredity, biological evolution, interdependence of organisms, matter and energy, and organization in living systems and the behavior of organisms. Students will leave this course with a better understanding of how their body functions, including how their systems work, and an awareness of the connections between individual cells and the entire body as a whole. Biology-103 will be evaluated through the EOCP exam which will figure in as 20% of each student's final grade.

**The textbook adopted for this course is:**

Pearson Environmental Science-Your World Your Turn © 2011  
ISBN: 978-0-13-372475-2

**Online Resources:**

[www.discoveryeducation.com](http://www.discoveryeducation.com)

[www.myenvironmentalscience.com](http://www.myenvironmentalscience.com)

[www.classzone.com](http://www.classzone.com)

**Link to SC Standards. Biology begins on p. 70.**

[http://ed.sc.gov/agency/ccr/Standards-Learning/documents/South\\_Carolina\\_Academic\\_Standards\\_and\\_Performance\\_Indicators\\_for\\_Science\\_2014.pdf](http://ed.sc.gov/agency/ccr/Standards-Learning/documents/South_Carolina_Academic_Standards_and_Performance_Indicators_for_Science_2014.pdf)

**Link to Biology Support Document**

[http://ed.sc.gov/agency/ccr/Standards-Learning/documents/2014HSBiology\\_SupportDoc.pdf](http://ed.sc.gov/agency/ccr/Standards-Learning/documents/2014HSBiology_SupportDoc.pdf)

# Environmental Science-103

# Course Specifics

Time	Unit Associated SEP	Unit Specifics	Text Chapters	Suggested Projects & Labs
15 days	<p><b>Intro to Environmental Science</b></p> <p><u>SEPs:</u> 1-Ask questions and define problems.</p> <p>4-Analyze and interpret data.</p> <p>7-Construct and analyze scientific arguments.</p>	<p>-Intro to Environmental Science -Scientific Method -Graphing, variables, measurement and tools used in scientific study of the environment, (quantitative vs qualitative observations) -Chemistry Review (names &amp; abbreviations of elements H, He, C, N, O, F, Na, Mg, Al, Si, P, Cl, K, Ca, Cr, Fe, Ni, Cu, Zn, As, Se, Hg, Pb, Rn, U) -Physical vs chemical changes -Mixtures vs solutions -pH scale (implications of pH) -Introduction to Photosynthesis and Respiration formulas</p>	<p>1.2 1.3  App. D</p>	<p>-Schoolyard nature walk (scavenger hunt) -Simple environmental experiment (paper lab) -Quick Lab (p. 22) -Examples of Phy/Chem changes -Examples of mix/soln -pH Lab</p>
15 days	<p><b>Your Place in the Environment</b></p> <p><u>SEPs:</u> 1-Ask questions and define problems.</p> <p>4-Analyze and interpret data.</p> <p>5-Use math and computational thinking.</p> <p>7-Construct and analyze scientific arguments.</p>	<p><b>H.B.6D.1, H.B.6A.2</b> -Define environment (abiotic, biotic, natural resources, conservation, populations) -Introduce Human Impact (ecological footprint, carrying capacity, waste management)</p> <p>*Refer back to human impact during the upcoming units of study.</p>	<p>4.1 4.2 4.3 8.1 8.2 8.3</p>	<p>-Outdoor field trips -Use rain gauges-then test for pH -Pick up litter (adopt-a-highway) -Campus recycling -Composting -Campus beautification -Fieldtrips (YC recycling centers, landfill)</p>
20 days	<p><b>Population Ecology</b></p> <p><u>SEPs</u> 2-Develop and use models</p> <p>7-Construct scientific arguments</p>	<p><b>H.B.6C.1</b> -Ecological interactions (predation, mutualism, parasitism, commensalism) -Energy transfer (food chains, food webs, biomass, energy pyramid, -Ecological disturbances (succession, dependent/independent factors) -Environmental conditions and population size -Protecting biodiversity -Interdependence of organisms</p>	<p>5.2 5.3 5.4 7.1 7.2 7.3</p>	<p>-Food web activity -Food chains -Water quality testing -Honeybees -Littering -Quadrat sampling</p>
20 days	<p><b>Earth's Environmental Systems</b></p> <p><u>SEPs</u> 2-Develop and use models</p> <p>7-Construct and analyze scientific arguments</p>	<p><b>H.B.6B.1, H.B.6B.2, H.B.6C.1, H.B.3A.2, H.B.3A.4</b> -Atoms, elements, molecules, and compounds -Macromolecules -pH (in relation to environmental systems) -Earth's systems -Details of photosynthesis and respiration. -Effects of plants and animals on the environment -Nutrient cycles -Climate change -Human impact on earth's systems</p>	<p>3.1 3.2 3.3 3.4 15 16</p>	<p>-Effects of pollution on plants -Which chemicals are helpful/harmful to plants -Have students grow plants them water them with polluted water then measure the effects</p>
15 days	<p><b>Environmental Policy</b></p> <p><u>SEPs</u> 7-Construct and analyze scientific arguments</p>	<p><b>H.B.6A.1</b> -Specific environmental regulations -A history of federal and state agencies -Areas of future policies -Global environmental organizations (Greenpeace) -Close with waste management, non renewable, environmental issues to come</p>	<p>9 17 18 19</p>	<p>-Career connections -DNR guest speakers -Excerpts from Silent Spring (Carson) -Erin Brockovich movie -Love Canal, NY -Use of sludge on farms -Duke's Coal Ash - Carcinogens -Earth day birthday</p>

**Biology-103****Course Specifics**

<b>Days/Dates</b>	<b>Standards/ Indicators</b>	<b>Content</b>
<b>Introduction to Biology (2 days)</b>		<ul style="list-style-type: none"> <li>• Lab Safety Review</li> <li>• Pre-Assessment</li> <li>• Common Themes in Biology</li> </ul>
Biochemistry Review w/ Quiz (3 days)	H.B.2A.1	<ul style="list-style-type: none"> <li>• Macromolecules (CLPN)</li> <li>• Atoms, Elements, Molecules, Compounds</li> <li>• pH</li> </ul>
<b>Cells – Part 1 (10 days)</b>	H.B.2B.1 H.B.2B.2	<ul style="list-style-type: none"> <li>• Cell Theory</li> <li>• Organelles</li> <li>• Cell Transport</li> </ul>
<b>Cells – Part 2 (10 days)</b>	H.B.2D.1 H.B.2D.2 H.B.2D.3 H.B.4D.1 H.B.2D.4 H.B.4C.2	<ul style="list-style-type: none"> <li>• Cell Differentiation</li> <li>• Cell Cycle</li> <li>• Cancer</li> </ul>
Cell Energy Review w/ Quiz (5 days)	H.B.3A.1 H.B.3A.2 H.B.3A.3 H.B.3A.4 H.B.3A.5 H.B.6B.1 H.B.6B.2 H.B.2A.1	<ul style="list-style-type: none"> <li>• ATP</li> <li>• Photosynthesis</li> <li>• Cellular Respiration</li> <li>• Fermentation</li> </ul>
<b>Heredity – Part 1 (10 days)</b>	H.B.2D.2 H.B.4C.1 H.B.4C.2 H.B.4C.3 H.B.4D.1	<ul style="list-style-type: none"> <li>• Meiosis</li> <li>• Mendelian Genetics, Mendel's Laws</li> <li>• Exceptions-Codominance, incomplete dominance, polygenic multiple alleles</li> </ul>
<b>Heredity – Part 2 (16 days)</b>	H.B.4A	<ul style="list-style-type: none"> <li>• DNA→Protein Biotechnology</li> <li>• Mutations</li> </ul>
<b>Evolution (15 days)</b>	H.B.5	<ul style="list-style-type: none"> <li>• Evidence of Evolution</li> <li>• Genetic Drift</li> <li>• Nonrandom mating</li> <li>• Mutations</li> <li>• Gene flow</li> <li>• Natural selection</li> </ul>
Ecology Review w/ Quiz (5 days)	H.B.6	<ul style="list-style-type: none"> <li>• Relationships</li> <li>• Succession</li> <li>• Geochemical Cycles</li> <li>• Maintaining Ecosystems</li> <li>• Human impact</li> </ul>
After EOC – fieldwork, field trips, labs, guest speakers, community service.	All	