

**BEST High School**  
*Environmental Science/SCI538*  
 Daniel Weiss  
 Email: [dweiss@lwsd.org](mailto:dweiss@lwsd.org)  
 Competency-based Syllabus

## Desired Results

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Credit: .125 per session

**Estimate of hours per week engaged in learning activities: 5 hours**

**Course Overview:** Environmental Science involves tools and techniques from many different branches of science such as biology, chemistry, geology, and political science. Environmental science allows us to understand and continue to learn more about how our “environment” works and also provides us with the tools to understand the human impact on the environment, ways to reduce the impact, and methods to restore our environment. Your knowledge of environmental science will also allow you to analyze environmental issues yourself and make your own decisions regarding which side of the issue to support, rather than accepting someone else’s point of view.

**Instructional Materials:** - *Environmental Science*. Karen Arms. 2008. Holt (*text*), *other reading materials and handouts will be posted on the class website on Communicator.*

This is a one semester course, with similar material presented in both semesters.

**Semester 1:**

**Session 1 (9/6 – 10/4)**– Basics of Environmental Science and Ecology

**Session 2 (10/5 – 11/4)** – Air, Pollution, and Climate

**Session 3 (11/7 – 12/9)** – Water and Water Pollution

**Session 4 (12/12 – 1/27)** – Food and Agriculture

**Semester 2:**

**Session 5 (1/30 – 3/2)** – Basics of Environmental Science and Ecology

**Session 6 (3/5 – 3/30)** – Air, Pollution, and Climate

**Session 7 (4/9 – 5/11)** – Water and Water Pollution

**Session 8 (5/14 – 6/22)** – Food and Agriculture

**All summative assessments are due by 1 pm two school days before the end of session**

**All coursework is aligned with the Washington State and District EALR’s**

**Students earn credit for proficient completion of each session’s summative assessments**

Session	Learning Target	Formative	Summative
<b>1</b>	Students will understand and begin to apply the essential tools and techniques of science.  This means that students will be able to: <ul style="list-style-type: none"> <li>analyze and discuss the use</li> </ul>	Collect science notebook after two weeks. Check for proficiency in completion of in class and homework assignments.	Write a paper describing a local environmental issue. This paper will provide background information, clearly identify both sides of the argument/issue, and accurately describe the

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	<p>of scientific method,</p> <ul style="list-style-type: none"> <li>Principals of communication and collaboration in science</li> <li>scientific honesty in biology.</li> </ul> <p><i>(Biology Power Standard 11)</i>  <i>(EALR 2.2 Nature of Science: Understand the nature of scientific inquiry)</i></p> <p>Students will understand what an ecosystem is, how living and non-living things interact in an ecosystem, and how species adapt to live in their ecosystem.</p> <p><i>EALR 1.2.1 0. Analyze how systems function including the inputs, outputs, transfers, transformations, and feedback of a system and its subsystems. This will apply directly to the interactions associated with the environment and ecosystems.</i></p> <p><i>EALR 1.3.9 Analyze the scientific evidence used to develop the theory of biological evolution and the concepts of natural selection, speciation, adaptation, and biological diversity.</i></p> <p><i>EALR 1.3.10 Analyze the living and nonliving factors that affect organisms in ecosystems</i></p>		<p>ecological interactions or adaptations occurring as a result of this issue. Finally, provide your own opinion and possible solutions to the environmental issue.</p> <p style="text-align: center;">OR</p> <p>Prepare and present a poster to the class describing a local environmental issue. This poster and presentation will provide background information, clearly identify both sides of the argument/issue, and accurately describe the ecological interactions or adaptations occurring as a result of this issue. Finally, provide your own opinion and possible solutions to the environmental issue.</p>
<b>2</b>	<p>Students will understand factors that influence weather and climate, including the effects of greenhouse gases and catastrophic events.</p> <p>Students will be able to describe the causes and results of air pollution and acid precipitation, including the impact on humans and the environment.</p> <p>Students will understand the composition of the Earth's</p>	<p>Collect science notebook after two weeks. Check for proficiency in completion of in class and homework assignments.</p>	<p><b>Acid Rain (FLR) Formal Lab Report</b></p> <p>AND</p> <p>Choose an environmental problem related to air, atmosphere or climate. Research what is being done or proposed to solve the problem. List as many possible solutions as you can find. Choose one solution that you think could actually work</p>

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	<p>atmosphere and how the atmosphere makes life possible.</p> <p>Students will understand how climate is affected by latitude, longitude, ocean currents, geography and human activities.</p> <p><i>EALR 1.3.6. Analyze the factors that influence weather and climate.</i></p>		<p>(logistically, financially, etc.) Justify your choice. Explain in detail how it would solve the problem and why you believe this is a good choice.</p>
<p><b>3</b></p>	<ul style="list-style-type: none"> <li>• Students will understand the ways in which human actions impact freshwater and marine ecosystems.</li> <li>• Students will be able to describe the distribution of Earth’s water resources and explain why fresh water is a limited resource.</li> <li>• Students will understand the relationship between surface water and groundwater, and how a watershed functions.</li> <li>• Students will understand how water is used by people and how human actions can cause water to become a non-renewable resource.</li> </ul> <p><b>This means that students will be able to:</b></p> <ul style="list-style-type: none"> <li>• Describe and analyze the water cycle</li> <li>• Describe and debate the issues associated with the shortage of freshwater in the world</li> <li>• Understand and debate the issues associated with drinking water.</li> <li>• Detail how a watershed works.</li> <li>• Understand where we get our drinking water and debate the pros and cons</li> <li>• Describe and analyze the causes and effects of</li> </ul>	<p>Collect science notebook after two weeks. Check for proficiency in completion of in class and homework assignments.</p>	<p><b>Creative Outlet of Water.</b></p> <p>Create a short story, song, rap, short comic book, magazine with several short articles and pictures, a detailed magazine article, computer graphic or video, or poster that will demonstrate your understanding of the learning this session. You will work alone on this project.</p> <ul style="list-style-type: none"> <li>• Comic</li> <li>• Story</li> <li>• Poster</li> <li>• Game</li> <li>• PowerPoint Presentation</li> </ul>

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	pollution to Puget Sound and the oceans		
<b>4</b>	<p>Define and describe the connection between food and agriculture.</p> <p>Understand what soil is and evaluate different types of soil.</p> <p>Describe different impacts to soil and soil fertility.</p> <p>Analyze the effects of pesticides.</p> <p>Debate the benefits and negative effects of genetically modified food.</p> <p>Compare and contrast several efforts towards sustainable agriculture.</p>	<p>Collect science notebook after two weeks. Check for proficiency in completion of in class and homework assignments.</p>	<p>Demonstrate your knowledge about food, how it is obtained and its effects on the environment in writing. You will also do some more research on genetically modified foods and/or sustainable agriculture and present the results of your research in writing.</p> <p>You will write a 3-4 page (double spaced) paper describing the following:</p> <ul style="list-style-type: none"> <li>•What is food and what is agriculture?</li> <li>•Why do people go hungry in the world?</li> <li>•What is soil and how is fertility of soil connected with food?</li> <li>•What are the environmental effects of the current forms of traditional, large-scale agriculture?</li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>•Describe what sustainable agriculture means and methods/practices that people are (or could be) using to achieve sustainable agricultural practices.</li> <li>•What can you do to help sustainable agriculture?</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>•Describe how genetically modified foods and crops are</li> </ul>

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			<p>being used today?</p> <ul style="list-style-type: none"><li>•What are the benefits of genetically modified foods and crops?</li><li>•What are the negative effects of genetically modified foods and crops?</li><li>•What is your personal opinion on the use of genetically modified foods and crops?</li></ul>
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## Types of Learning Activities

[this chart demonstrates the types of learning activities the student will complete throughout the course]

Direct Instruction	Indirect Instruction	Experiential Learning	Independent Study	Interactive Instruction
<input checked="" type="checkbox"/> Structured Overview <input checked="" type="checkbox"/> Mini presentation <input type="checkbox"/> Drill & Practice <input checked="" type="checkbox"/> Demonstrations <input type="checkbox"/> Other (List)	<input checked="" type="checkbox"/> Problem-based <input checked="" type="checkbox"/> Case Studies <input checked="" type="checkbox"/> Inquiry <input type="checkbox"/> Reflective Practice <input checked="" type="checkbox"/> Project <input checked="" type="checkbox"/> Paper <input checked="" type="checkbox"/> Concept Mapping <input type="checkbox"/> Other (List)	<input type="checkbox"/> Virt. Field Trip <input checked="" type="checkbox"/> Experiments <input checked="" type="checkbox"/> Simulations <input type="checkbox"/> Games <input checked="" type="checkbox"/> Field Observ. <input type="checkbox"/> Role-playing <input checked="" type="checkbox"/> Model Bldg. <input type="checkbox"/> Surveys <input type="checkbox"/> Other (List)	<input checked="" type="checkbox"/> Essays <input type="checkbox"/> Self-paced computer <input checked="" type="checkbox"/> Journals <input type="checkbox"/> Learning Logs <input checked="" type="checkbox"/> Reports <input checked="" type="checkbox"/> Directed Study <input checked="" type="checkbox"/> Research Projects <input type="checkbox"/> Other (List)	<input checked="" type="checkbox"/> Discussion <input checked="" type="checkbox"/> Debates <input type="checkbox"/> Role Playing <input type="checkbox"/> Panels <input type="checkbox"/> Peer Partner Learning <input type="checkbox"/> Project team <input checked="" type="checkbox"/> Laboratory Groups <input checked="" type="checkbox"/> Think, Pair, Share <input type="checkbox"/> Cooperative Learning <input type="checkbox"/> Tutorial Groups <input type="checkbox"/> Interviewing <input type="checkbox"/> Conferencing <input type="checkbox"/> Other (List)