

**ECKSTEIN MS 7TH GRADE LIFE SCIENCE FY COURSE 2010–2011 CURRICULUM ROAD MAP  
(SEMESTER 1)**

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**ECKSTEIN MS 7<sup>TH</sup> GRADE LIFE SCIENCE FY COURSE 2009–2010 CURRICULUM ROAD MAP  
(SEMESTER 2)**

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## Eckstein MS 7th Grade Life Science FY Course 2009–2010 Curriculum Road Map (SEMESTER 1)


### Guiding Questions

- How can I investigate the living world?
- What makes me who I am?
- How am I connected to the environment?


<b>FIRST MARKING PERIOD September 9—November 10</b>		
<b>UNIT</b>	<b>KEY CONCEPTS</b>	<b>FOCUS CONTENT AND MAJOR ACTIVITIES</b>
<p><b>Unit 1 (Intro, Classification &amp; Scientific Method)</b> How can we study living things?</p> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="text-align: center; margin-right: 10px;"> <div style="background-color: black; color: white; padding: 2px; font-size: 8px;">PACING</div> </div> <div> <p><b>Suggested Pacing:</b> September 9— September 23 (2 instructional weeks)</p> </div> </div> <p style="margin-top: 10px;"><b>Suggested Performance Assessment:</b></p> <ol style="list-style-type: none"> <li>1. Design an experiment, per DOL Invest. 6. Transpiration</li> <li>2. Write a Formal Lab, as modeled in class</li> </ol> <p style="margin-top: 10px;"><b>Suggested Formative Assessment:</b> Uncovering Students Ideas Probe:**</p> <ol style="list-style-type: none"> <li>1. Plants in the Dark and Light (Hypothesis) (Vol. 2, pg. 107);</li> <li>2. What is a Hypothesis? (Vol. 3, pg. 101)</li> </ol>	<p><b>Key 1:</b> Classroom Rules &amp; Expectations and what to expect.</p> <p><b>Key 2:</b> Life science involves designing experiments to investigate questions about living things.</p> <p><b>Key 3:</b> Laboratory work and other types of investigations are important in life science &amp; must be done safely.</p> <p><b>Key 4:</b> Group Work is fundamental to science. Cf. Group Roles Poster &amp; Handout.*</p> <p><b>Key 5:</b> Classification of living organisms is fundamental to science.</p> <p><b>Key 6:</b> Every written lab contains six (6) sections with clear headings: (1) Introduction &amp; Hypothesis, (2) Variables, (3) Procedure &amp; Materials, (4) Data &amp; Observations, (5) Conclusion &amp; Analysis, and (6) Error Analysis.</p>	<p><b>Focus Content</b> Components of a controlled experiment Variables Testable questions Lab equipment Lab safety Measurement Classification Definition of <i>living</i> Biodiversity Internal vs. external structures Dichotomous keys Taxonomy Field Studies &amp; journaling</p> <p><b>Major Activities</b> FOSS Diversity of Life: Investigation 6 Transpiration Inv. 10 Kingdoms PEI Field Investigations: Descriptive, Comparative, Correlative Rubric</p> <p><b>*Group Roles:</b></p> <ol style="list-style-type: none"> <li>1. Team Leader/PI</li> <li>2. Resource Manager</li> <li>3. Reader/Reporter</li> <li>4. Safety Maintenance Director</li> </ol>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		


\*\* Adminster Probe in class; discuss ideas etc.; correct using AfterTest.


UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 2 (Long-Term HW Assign.)</b>                      How am I connected to the environment?                      What can we learn about diseases that human body systems?                      What health careers are concerned about the treatment or cure of human disease?</p> <p><b>PACING</b>   <b>Suggested Pacing:</b>                      September 24-25                      (2 instructional days)</p> <p><b>Suggested Performance Assessment:</b></p> <ol style="list-style-type: none"> <li>1. Terrarium/Aquarium (Sem 1)</li> <li>2. Research Project on Diseases or Health Care Careers. (Sem 2)</li> <li>3. Ecology &amp; Garden Project</li> </ol> <p><b>Suggested Formative Assessment:</b>                      Uncovering Students Ideas Probe:</p> <ol style="list-style-type: none"> <li>1. Doing Science (Vol. 3, pg. 93)</li> </ol>	<p><b>Key 1:</b> Terrarium/Aquarium in order to explain how and why humans are able to interact and influence the environment.</p> <p><b>Key 2:</b> Research Project on Diseases or Health Care Careers in order to research common diseases, drugs and determine their effects on the body; or to determine a health care career and how that would influence students' choice of career.</p> <p><b>Key 3:</b> Student Presentations &amp; Research Paper will be at the end of the semester for both Projects.</p>	<p><b>Focus Content</b>                      Biodiversity                      Characteristics of Living Organisms                      Life Processes and the Flow of Matter and Energy                      Interdependence of Life                      Human Interaction with the Environment</p> <p><b>Major Activities</b></p> <ol style="list-style-type: none"> <li>1. Terrarium/Aquarium</li> <li>2. STC/MS Human Body Systems: Anchor Activity — Diseases and Health Careers</li> <li>3. Ecology &amp; Garden Project</li> </ol>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 3 (What is Living?)</b>                      What is a living organism? What are the characteristics of a living organism?</p> <p><b>PACING</b>   <b>Suggested Pacing:</b>                      September 28–                      October 2                      (1 instructional week)</p> <p><b>Suggested Performance Assessment:</b></p> <ol style="list-style-type: none"> <li>1. Written Assessment to identify living and nonliving organisms and define four of the seven characteristics.</li> <li>2. Observe a patch of ground (ongoing) or short term and/or garden project</li> </ol> <p><b>Suggested Formative Assessment:</b>                      Uncovering Students Ideas Probe:</p> <ol style="list-style-type: none"> <li>1. Is It Living? (Vol. 1, pg. 123);</li> <li>2. Does It Have a Life Cycle? (Vol. 3, pg. 111);</li> <li>3. Is It Food? (Vol. 4, pg. 91)</li> </ol> <p><i>CBA #1 Q1 Living vs. Non-Living Test</i></p>	<p><b>Key 1:</b> A living organism is one that exhibits (or once exhibited) seven (7) characteristics.</p> <p><b>Key 2:</b> The seven (7) characteristics of a living organism are: reproduces, grows, exchanges gases, consumes energy (food), consumes water, responds to the environment, and eliminates waste.</p> <p><b>Key 3:</b> Identify an organism as living or non-living and be able to apply the seven characteristics to explain why or why not.</p>	<p><b>Focus Content</b>                      Classification                      Systems                      Observation — Subjective vs. Objective                      Relationship between structure and function</p> <p><b>Major Activities</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> FOSS Diversity of Life:</li> <li><input type="checkbox"/> Investigation 1 What is Living?</li> <li><input type="checkbox"/> EE ABCs</li> <li><input type="checkbox"/> Field Journaling – Observations type project</li> <li><input type="checkbox"/> Nature/Unnature Walk</li> </ul>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 4 (Intro to the Microscope)</b> What is a microscope and how do I use it to see the microscopic world?</p> <p><b>PACING</b> ■■■■■■■■■■</p> <p><b>Suggested Pacing:</b> October 5-8 (1 instructional week)</p> <p><b>Suggested Performance Assessment:</b> 1. Successful use of the microscope and written assessment identifying the parts and appropriate use.</p> <p><b>Suggested Formative Assessment:</b> Uncovering Students Ideas Probe: 1. Whale and Shrew (Vol.2, pg. 137)</p>	<p><b>Key 1:</b> Name the parts of the microscope and learn proper use/care.</p> <p><b>Key 2:</b> Define the field of view and understand that this field is often upside down and that items move in opposite directions.</p> <p><b>Key 3:</b> Define the focal plane and understand that it is possible to focus on several layers all at once or one at a time.</p> <p><b>Key 4:</b> Microscopes are tools used by scientists to discover the world around us.</p>	<p><b>Focus Content</b> Classification Systems Observation — Subjective vs. Objective Scale (How Big &amp; Power of 10) Relationship between structure and function</p> <p><b>Major Activities</b> <input type="checkbox"/> FOSS Diversity of Life: <input type="checkbox"/> Investigation 2 Introduction to the Microscope</p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 5 (Cells &amp; Cell Theory)</b>            What do we know about the cells and organelles?            What is the difference between eukaryotic and prokaryotic cells?</p> <p><b>PACING</b>   <b>Suggested Pacing:</b>            October 12-16            (1 instructional week)</p> <p><b>Suggested Performance Assessment:</b>            Make a model of a cell (plant/animal) using common foods</p> <p><b>Suggested Formative Assessment:</b>            Uncovering Students Ideas Probe:            1. Is It Made of Cells (Vol. 1, pg. 131);            2. Is It a Theory? (Vol. 3, pg. 83);</p>	<p><b>Key 1:</b> There are five (5) kingdoms of living things: (1) Prokaryotic Bacteria &amp; Monera (viruses), (2) Protists (single-celled eukaryotes); (3) Fungi; (4) Plant; and (5) Animal.</p> <p><b>Key 2:</b> Three of the five kingdoms of living things (Monera (viruses), Protists, and Fungi) all include single-celled organisms.</p> <p><b>Key 3:</b> Some living cells <u>are</u> organisms.</p> <p><b>Key 4:</b> Some living cells <u>are not</u> organisms depending on their ability to live freely and independently, not dependent on being part of a larger organism for their survival.</p> <p><b>Key 5:</b> All organisms are made of cells. Cells are the basic unit of life. All cells come from pre-existing cells. The cell contains hereditary information (DNA) that is passed on from cell to cell during cell division.</p>	<p><b>Focus Content</b>            Scale            Levels of organization in living organisms            Prokaryotic and eukaryotic cells            Relationship between structure and function            Cell organelles            Cell cycle            Meiosis &amp; Mitosis            Classification – Domains &amp; Kingdoms</p> <p><b>Major Activities</b>            FOSS Diversity of Life:            Investigation 3 Microscopic Life (Discovering Cells, Paramecium, Microworlds)            FOSS Diversity of Life:            Investigation 10 Kingdoms of Life (Bacteria and Fungi; Exponential Growth; Microbes We Eat)            Cell Theory            FOSS Diversity of Life:            Investigation 4 The Cell (Human Cells, Ribbon of Life)</p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 6 (Microscopic Life)</b>            What type of life can I see using a Microscope?</p> <p><b>PACING</b>  </p> <p><b>Suggested Pacing:</b>            October 19–            October 30            (2 instructional weeks)</p> <p><b>Suggested Performance Assessment:</b>            Identify as many single celled organisms as possible while using the microscope.            Compare and contrast prokaryotic and eukaryotic cells.</p> <p><b>Suggested Formative Assessment:</b>            Uncovering Students Ideas Probe:            1. Is It Made of Cells (Vol. 1, pg. 131) <i>CBA #2 Q1</i></p>	<p><b>Key 1:</b> Three of the five kingdoms of living things (Monera (viruses), Protists (bacteria), and Fungi) all include single-celled organisms.</p> <p><b>Key 2:</b> Individual cells have the same needs and perform the same life functions as more complex organisms.</p> <p><b>Key 3:</b> Many life processes are observable only through the aid of a microscope.</p> <p><b>Key 4:</b> Plants contain stomates that are responsible for transpiration.</p>	<p><b>Focus Content</b>            Scale            Levels of organization in living organisms            Prokaryotic and eukaryotic cells            Relationship between structure and function            Cell organelles            Cell cycle</p> <p><b>Major Activities</b>            FOSS Diversity of Life:            Investigation 3 Microscopic Life (Discovering Cells, Paramecium, Microworlds)            FOSS Diversity of Life:            Investigation 10 Kingdoms of Life (Bacteria and Fungi; Exponential Growth; Microbes We Eat)            Cell Theory            FOSS Diversity of Life:            Investigation 4 The Cell (Human Cells, Ribbon of Life)</p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 9 (Bacteria &amp; Fungi)</b>            What are Bacteria? How does bacteria grow? How are bacteria different from other living organisms?</p> <p><b>PACING</b>   <b>Suggested Pacing:</b>            November 16—27            (2 instructional weeks,            no classes Nov. 26-27)</p> <p><b>Suggested Performance Assessment:</b></p> <ol style="list-style-type: none"> <li>Bacteria &amp; Fungi culture using Agar of room surfaces.</li> <li>Bacterial Growth/Graph Analysis Investigation &amp; Formal Lab</li> </ol> <p><b>Suggested Formative Assessment:</b>            Uncovering Students Ideas Probe:</p>	<p><b>Key 1:</b> Explain that bacteria and fungi are found on all surfaces and in the water and air around us</p> <p><b>Key 2:</b> Explain how bacteria and fungi carry out the functions of living organisms (prokaryotic cells).</p> <p><b>Key 3:</b> Bacteria reproduction and growth occurs at an exponential rate.</p> <p><b>Key 4:</b> Graph creation and analysis of bacterial growth.</p>	<p><b>Focus Content</b>            Scale            Exponential Growth            Graph Analysis</p> <p><b>Major Activities</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Investigation 10 Kingdoms of Life (Bacteria and Fungi; Exponential Growth; Microbes We Eat)</li> <li><input type="checkbox"/> Dissect &amp; Describe mushrooms</li> <li><input type="checkbox"/> Experiment with Yeast.</li> </ul>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 7 (DNA)</b> What is DNA? Why is it important?</p> <p><b>PACING</b> ■■■■■ ■■■■■</p> <p><b>Suggested Pacing:</b> November 2—6 (1 instructional week)</p> <p><b>Suggested Performance Assessment:</b> Make a DNA sequence that shows proper base pairing with a color for each amino acid (adenine, cytosine, guanine, thymine), and that attempts to show the double helix.</p> <p><b>Suggested Formative Assessment:</b> Uncovering Students Ideas Probe: 1. Is It a Model? (Vol.4, pg. 73) <i>CBA #3 Q1</i></p>	<p><b>Key 1:</b> The cell contains hereditary information (DNA) that is passed on from cell to cell during cell division.</p> <p><b>Key 2:</b> DNA is Cells are the building block of a cell.</p> <p><b>Key 3:</b> DNA contains four protein bases: adenine, cytosine, guanine, and thymine.</p> <p><b>Key 4:</b> These bases can be represented by the letters <i>A, C, G, and T,</i></p> <p><b>Key 5:</b> Each type of base on one strand forms a bond with just one type of base on the other strand: A bonds only to T, and C bonds only to G.</p>	<p><b>Focus Content</b> Scale Amino Acids Base Pairs Names &amp; Bonding Roll of DNA &amp; Human Genome</p> <p><b>Major Activities</b> DNA Sequencing &amp; Genetics SALI Our Genes, Our Selves</p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		
<b>FIRST MARKING PERIOD ENDS NOVEMBER 6</b>		


**ASSESSMENTS TERM 1:**


1. ***Syllabus/Safety Contract Returned Signed (HW)***
2. ***Transpiration Formal Lab w. QSR Rubric Modeling***
3. ***What is Living Test (Test/Quiz)***
4. ***Microscopic Life Compare & Contrast (Lab)***
5. ***Genetic Variation Graph/Analysis (Classwork)***
6. ***DNA Sequence and analysis (HW)***


**Additional Assessments TERM 1 include:**


1. ***Journal Checks (at least twice)***
2. ***USI Probes before and after each Unit (see each unit for more detail).***



UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 10 (Plant Reproduction)</b>            What does the reproduction organs of a plant look, and how do they work?</p> <p><b>PACING</b>  </p> <p><b>Suggested Pacing:</b>            November 30—            December 9            (2 instructional week)</p> <p><b>Suggested Performance Assessment:</b>            Dissect a flower with proper labels and create a pollination story (in myriad formats) that includes all parts of plant reproduction.            Create a Venn diagram comparing sexual and asexual reproduction.</p> <p><b>Suggested Formative Assessment:</b>            Uncovering Students Ideas Probe:            1. Is It a Plant (Vol. 2, pg. 93);            2. Is It Food for Plants (Vol. 2, pg. 113)            3. Needs of Seeds (Vol. 2. p. 101)  <i>CBA #1 Q2</i></p>	<p><b>Key 1:</b> Plants reproduce much the same as other organisms; there is a pollination story</p> <p><b>Key 2:</b> In order to produce a new plant fertilization must occur between a female sex cell (egg) and male sex cell (sperm). This is called pollination.</p> <p><b>Key 3:</b> Pollination and seed dispersal occur several ways: poppers, floaters, grabbers, digesters, and combinations.</p> <p><b>Key 4:</b> The shape of each part of a flower helps it carry out a specific function.</p> <p><b>Key 5:</b> Flowers grow, develop, and reproduce during the pollination cycle.</p> <p><b>Key 6:</b> Plants are producers and create energy through a process known as Photosynthesis</p>	<p><b>Focus Content</b>            Flower Part Vocabulary            Plant Reproduction            Pollination            Seed Dispersal (methods &amp; explanations)            Environmental Adaptation            Characteristics of Living Organisms            Photosynthesis            Dormant &amp; Dormancy (cf. CBA #1)</p> <p><b>Major Activities</b>            FOSS Diversity of Life:            Investigation 7 Plant Reproduction (Flower Dissection; Seed Dispersal)            Investigation 7 (Lima Bean Dissection; Roots &amp; Shoots (cf. garden project vs. Petri Dish))</p> <p>Photosynthesis:  <math>6\text{CO}_2 + 6\text{H}_2\text{O} + \text{energy (sunlight)} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2</math></p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 11 (Animals &amp; Adaptations)</b>            What adaptations have animals developed to a result of their environment?</p> <p><b>PACING</b>   <b>Suggested Pacing:</b>            December 10–18            (2 instructional weeks)</p> <p><b>Suggested Performance Assessment:</b></p> <ol style="list-style-type: none"> <li>1. Dissect an animal</li> <li>2. Classify differences between animal kingdom phyla by cutting and pasting characteristics into journal under headings.</li> <li>3. Create a poster with information to share based on one of eight (1 of 8) invertebrate &amp; vertebrate groups to jigsaw and each one teach one throughout the grade (multiple class jigsaw).</li> </ol> <p><b>Suggested Formative Assessment:</b>            Uncovering Students Ideas Probe:</p> <ol style="list-style-type: none"> <li>1. Is It an Animal? (Vol. 1, pg. 117);  <i>CBA #2 Q2</i></li> <li>2. Adaptation (Vol. 4, pg. 113)</li> </ol>	<p><b>Key 1:</b> The animal kingdom is divided into invertebrates, vertebrates, and insects</p> <p><b>Key 2:</b> An organism contains several systems of increasing complexity: atom, molecule, organelle, cell, tissue, organ, and animal. (Ribbon of Life)</p> <p><b>Key 3:</b> Explain the role of an exoskeleton and an endoskeleton by comparing contrasting the two.</p> <p><b>Key 4:</b> Explain the similarities and differences between invertebrates, vertebrates, and insects.</p> <p><b>Key 5:</b> The animal kingdom contains eight phyla: sponges, cnidarians, flat &amp; round worms, mollusks, segmented worms, arthropods, echinoderms, and chordates.</p>	<p><b>Focus Content</b></p> <p>Scale            Levels of organization in living organisms            Prokaryotic and eukaryotic cells            Relationship between structure and function            Cell organelles            Cell cycle</p> <p><b>Major Activities</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> FOSS Diversity of Life:</li> <li><input type="checkbox"/> Investigation 8 Snails</li> <li><input type="checkbox"/> FOSS Diversity of Life:</li> <li><input type="checkbox"/> Investigation 9 Cockroaches</li> <li><input type="checkbox"/> Froguts Virtual Dissection:               <ul style="list-style-type: none"> <li>o Starfish</li> <li>o Squid</li> <li>o Frog</li> <li>o Fetal Pig</li> <li>o Cow Eye</li> <li>o Owl Pellet</li> </ul> </li> </ul> <p><i>Note:</i> Only <u>one</u> dissection performed.</p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 12 (Ecology)</b> How are living things dependent on each other and the environment?</p> <p><b>PACING</b>  </p> <p><b>Suggested Pacing:</b> January 4—15 (2 instructional weeks)</p> <p><b>Suggested Performance Assessment:</b> Diagram a food web and write a paragraph explaining relationships within the food web.</p> <p><b>Suggested Formative Assessment:</b> Uncovering Students Ideas Probe: 1. Functions of Living Things (Vol. 1, pg. 147) <i>CBA #3 Q2</i>; 2. Giant Sequoia Tree (Vol. 2, pg. 121); 3. Rotting Apple (Vol. 3, pg. 139)</p>	<p><b>Key 1:</b> Ecosystems balance living and nonliving factors.</p> <p><b>Key 2:</b> Energy flows between living things in the environment.</p> <p><b>Key 3:</b> Producers make energy from the sun available to other living things on the Earth.</p> <p><b>Key 4:</b> Energy passes through an ecosystem only once, while matter is recycled.</p>	<p><b>Focus Content</b> Levels of organization in an ecosystem Food webs Energy in food Photosynthesis Trophic levels Integrated pest management Agriculture</p> <p><b>Major Activities</b> FOSS Populations and Ecosystems: Investigation 2 Sorting Out Life FOSS Populations and Ecosystems: Investigation 4 Mono Lake FOSS Populations and Ecosystems: Investigation 5 Finding the Energy SEPUP Ecology (shared with 8<sup>th</sup>) Forests of Washington: Forest Ecosystems and People Facing The Future (FTF) Understanding Sustainability (2-week)</p> <p>Salmon Ecology (cf. EE)</p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 13 (Human Interdependence &amp; the Environment)</b> How do different types of environments work as systems?</p> <p><b>PACING</b>   <b>Suggested Pacing:</b> January 19—28 (2 instructional weeks)</p> <p><b>Suggested Performance Assessment:</b></p> <ol style="list-style-type: none"> <li>1. Research, create a poster, and write an Environmental Impact Statement (EIS) that explains how human interaction has affected the biome and organisms in it.</li> <li>2. Individual Footprint Presentation to illustrate or describe 1 way to reduce your individual Ecological Footprint.</li> </ol> <p><b>Suggested Formative Assessment:</b> Uncovering Students Ideas Probe: 1. Habitat Change (Vol. 2, pg. 143)</p>	<p><b>Key 1:</b> Changes in the environment can affect the size of a population.</p> <p><b>Key 2:</b> Different types of land environments have different living and nonliving characteristics.</p> <p><b>Key 3:</b> Water environments also differ in their living and nonliving characteristics.</p> <p><b>Key 4:</b> Human activities impact the environment.</p> <p><b>Key 5:</b> We can reduce human impact on the environment.</p>	<p><b>Focus Content</b> Population change Limiting factors Range of biomes and their defining characteristics Pollution Habitat destruction Threatened, endangered, and extinct species</p> <p><b>Major Activities</b> FOSS Populations and Ecosystems: Investigation 6 Population Size FOSS Populations and Ecosystems: Investigation 7 Ecoscenarios SEPUP Ecology (shared with 8<sup>th</sup>) Forests of Washington: Forest Ecosystems and People Facing The Future (FTF) Understanding Sustainability (2-week)</p> <p>Salmon EE Unit</p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		
<b>SECOND MARKING PERIOD ENDS JANUARY 28</b>		

**ASSESSMENTS TERM 2:**

- 1. Bacterial Growth/Exponential Growth Graph Analysis (Lab)**
- 2. Bacterial Growth Formal Lab w/ QSR Rubric (Lab, HW)**
- 3. Flower Dissection (Lab)**
- 4. Pollination Story (HW)**
- 5. Virtual Dissection (Classwork)**
- 6. Animal Kingdom Test (Test/Quiz)**
- 7. Food web Diagram w/ explaining relationships (Lab, Project) CBA #4**
- 8. Biome Posters w/ Human Interdependence Explanation (HW) CBA #5**
- 9. Individual Ecological Footprint Presentation**

**Additional Assessments TERM 2 include:**


- 1. Journal Checks (at least twice)**
- 2. USI Probes before and after each Unit (see each unit for more detail).**


## Eckstein MS 7<sup>th</sup> Grade Life Science FY Course 2009–2010 Curriculum Road Map (SEMESTER 2)


### Guiding Questions

- How can I investigate the living world?
- What makes me who I am?
- How am I connected to the environment?

<b>THIRD MARKING PERIOD</b> <b>February 1—April 9</b> <b>WASL Testing Window: April 13—April 24</b>		
UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 14 (Human Body Systems)</b>                      What do we know about the organs and systems that comprise the human body?</p> <p><b>PACING</b>  <b>Suggested Pacing:</b>                      February 1—2                      (2 instructional days)</p> <p><b>Suggested Performance Assessment:</b>                      Students express what they know about organs and to which systems the organs belong by using a large poster. (cf. "Frog Sandwich")</p> <p><b>Suggested Formative Assessment:</b>                      Uncovering Students Ideas Probe:                      1. Human Body Basics (Vol. 1, pg.139);                      2. Is It a System (Vol. 4, pg. 81)</p>	<p><b>Key 1:</b> The human body is an incredible machine comprised of several independent, comprehensive systems.</p> <p><b>Key 2:</b> The systems that comprise the human body are: circulatory, digestive, reproductive, excretory, nervous-sensory, respiratory, integument &amp; musculoskeletal.</p> <p><b>Key 3:</b> So that our bodies can act as an interconnected set of systems, energy must be distributed.</p>	<p><b>Focus Content</b>                      Relationship between structure and function                      Energy Sources and Kinds                      Systems                      Structure and Organization of Living Systems,                      Human Biology</p> <p><b>Major Activities</b>                      STC/MS Human Body Systems                      Lesson 1 Body Mapping</p> <p>Cf. Frog Virtual Dissection &amp; System Mapping (per handout "Frog Sandwich")</p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 15 (Digestive System)</b>            How is food moved through the digestive tract?            What is the order of the parts of the digestive tract?</p> <p> <b>Suggested Pacing:</b>            February 8–26            (2 instructional weeks, no classes 2.15-2.19)</p> <p><b>Suggested Performance Assessment:</b>            Students perform tests to determine the presence of a digestive enzyme — CSI scenario. Students independently respond to a variety of short answer questions.</p> <p><b>Suggested Formative Assessment:</b>            Uncovering Students Ideas Probe:            1. Health CBA Touring the Systems;            2. Digestive (Vol. 4, pg. 131)</p>	<p><b>Key 1:</b> <i>Peristalsis</i> is the process of <i>mechanical</i> digestion that break down food and moves food and waste through the digestive tract</p> <p><b>Key 2:</b> Food continues to be broken down into different substances in the digestive tract by <i>chemical</i> digestion.</p> <p><b>Key 3:</b> Enzymes are special chemicals in our bodies that chemically break down food.</p> <p><b>Key 4:</b> We can infer the presence of enzymes by using indicators and making careful observations.</p>	<p><b>Focus Content</b>            Chemical &amp; Mechanical Digestion            Peristalsis            Carbohydrate &amp; Starch (Saccharine)            Energy sources &amp; transformation            Chemical reactions</p> <p><b>Major Activities</b>            STC/MS Human Body Systems            Lesson 2 Movement of Food Through the Digestive Tract            STC/MS Human Body Systems            Lesson 3 Exploring Carbohydrates            STC/MS Human Body Systems            Lesson 4 Digestion in the Mouth            STC/MS Human Body Systems            Lesson 5 Digesting in the Stomach            STC/MS Human Body Systems            Lesson 6 Diffusion and Active Transport            STC/MS Human Body Systems            Lesson 7 Surface Area and Absorption            STC/MS Human Body Systems            Lesson The Digestive System: An Assessment</p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 16 (Circulatory System)</b>                      Why does blood flow from the heart, to the lungs, back to the heart, and out to the body?                      What are treatments for heart ailments? (bioengineering)</p> <p> <b>Suggested Pacing:</b>                      April 5—23                      (3 instructional weeks)</p> <p><b>Suggested Performance Assessment:</b>                      Formal Lab — In Pursuit of the Artificial Blood Vessel; students design, test, record, and develop a formal written lab (using a template) with QSR Rubric.</p> <p><b>Suggested Formative Assessment:</b>                      Uncovering Students Ideas Probe:                      1. Health CBA Touring the Systems</p>	<p><b>Key 1:</b> The circulatory system moves oxygen and digested food to the cells and carbon dioxide, water, and other waste from cells.</p> <p><b>Key 2:</b> Different factors affect the body’s heart rate and blood pressure.</p> <p><b>Key 3:</b> Bioengineers are scientists that develop alternatives to mimic functions of the human body system.</p> <p><b>Key 4:</b> When the heart fails there are several alternatives: artificial blood vessels, artificial heart, heart cell graft (from stem cell).</p>	<p><b>Focus Content</b>                      Diseases and Treatments of the Heart/Blood Vessels                      Bioengineers (Stem Cell Research)                      Heart Anatomy                      Blood Pressure                      Body Mass Index</p> <p><b>Major Activities</b>                      HBS Lesson 14 Pump Model                      Youth Take Heart (YTH)                      Lesson 2 To Feel A Heart (Dissection)                      YTH Lesson 3 Give Me the Runaround Simulation (homeostasis, etc.)                      YTH Lesson 4 Circulatory Learning Stations &amp; Presentations                      YTH Lesson 6 You Are What You Eat                      YTH Lesson 8/9 In Pursuit of the Artificial Blood Vessel</p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		


UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 17 (Respiratory System)</b>            What are models and why are they used?            How does air move in and out of the lungs?            Why do humans breath?</p> <p> <b>Suggested Pacing:</b>            March 1—12            (2 instructional weeks)</p> <p><b>Suggested Performance Assessment:</b>            Students are able to identify 4-5 ways that the model is like (strengths) and 4-5 ways the model is not like (limitations) a pair of lungs.</p> <p><b>Suggested Formative Assessment:</b>            Uncovering Students Ideas Probe:            1. Health CBA Touring the Systems            2. Respiration (Vol. 3, pg. 131)</p> <p><i>This unit extends into the next marking period.</i></p>	<p><b>Key 1:</b> The body relies on the diaphragm, a muscle that separates the chest from the abdomen, to move air into and out of the lungs.</p> <p><b>Key 2:</b> The amount of air pair of human lungs is capable of holding varies from person to person.</p> <p><b>Key 3:</b> Models of lungs and lung tissue are powerful tools for learning how human lungs do and don't work.</p> <p><b>Key 4:</b> It is through cellular respiration, a process similar to combustion, that our cells get their energy from food.</p> <p><b>Key 5:</b> Different types of food have different types of chemical potential energy.</p>	<p><b>Focus Content</b>            Cellular Respiration            Gas Exchange            Characteristics of Living Organisms            Energy Transfer and Transformation            Physical and Chemical Changes</p> <p><b>Major Activities</b>            STC/MS Human Body Systems Lesson 10 Assessing Breathing Models            STC/MS Human Body Systems Lesson 11 How Much Air Can You Exhale            STC/MS Human Body Systems Lesson 12 Recipe for Energy — Cellular Respiration            STC/MS Human Body Systems Lesson 13 Releasing Energy From Food</p> <p>Combustion:            Oxidation:  <math>2\text{CH}_2 \text{ (candle wax)} + 6\text{O}_2 \rightarrow 2\text{CO}_2 + 2\text{H}_2\text{O}</math></p> <p>Cellular Respiration:  <math>\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}</math></p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		
<b>THIRD MARKING PERIOD ENDS APRIL 9</b>		


**ASSESSMENTS TERM 3:**


1. **Human Body Systems Poster (Classwork)**
2. **Chart food for 24-hours and record digestion activities (HW)**
3. **CSI Scenario (sugar & starch tests) (Project)**
4. **Artificial Blood Vessel Formal Lab (Project/Formal Lab)**
5. **WASL Scenario PCA (Test/Quiz)**
6. **Lung Models & Venn Diagram (HW)**


**Additional Assessments TERM 3 include:**


1. **Journal Checks (at least twice)**
2. **USI Probes before and after each Unit (see each unit for more detail).**


<b>FOURTH MARKING PERIOD</b> <b>April 12—June 22</b> <b>WASL Testing Window April 12—23, 2009</b>		
UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 18 (Musculoskeletal System)</b>                      How do muscles and bones work together?                      What types of movement do different joints allow? How do muscles work with bones to move the body?                      How can you measure muscle strength? Is muscle size an indication of muscle strength?                      How and why does muscles fatigue?                      How do muscles feel when they are fatigued?</p> <p> <b>Suggested Pacing:</b>                      March 15—18                      (1 instructional week)</p> <p><b>Suggested Performance Assessment:</b>                      Students graph muscle fatigue over time in order to determine the risk of repetitive stress injury.</p> <p><b>Suggested Formative Assessment:</b>                      Uncovering Students Ideas Probe:                      1. Health CBA Touring the Systems</p>	<p><b>Key 1:</b> The musculoskeletal system is made of bones, muscles, tendons, and ligaments.</p> <p><b>Key 2:</b> Different types of muscles have different functions: cardiac, skeletal, smooth.</p> <p><b>Key 3:</b> Graph and analyze student results of muscle fatigue.</p> <p><b>Key 4:</b> Compare and contrast physical results with dynamic results on the computer using a hand dynamometer.</p>	<p><b>Focus Content</b>                      Systems                      Structure and Organization of Living Systems                      Nature of Forces                      Graph Analysis</p> <p><b>Major Activities</b>                      STC/MS Human Body Systems                      Lesson 19 Joints and Movement                      STC/MS Human Body Systems                      Lesson 20 Muscle Size and Strength                      STC/MS Human Body Systems                      Lesson 21 Exploring Muscle Fatigue</p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 19 (Nervous System)</b>            How does the nervous system control actions in the body?            What role does the brain play?</p> <p><b>PACING</b>   <b>Suggested Pacing:</b>            May 3—7            (1 instructional week)</p> <p><b>Suggested Performance Assessment:</b>            Model of the Neuron, synapse, and brain function.</p> <p><b>Suggested Formative Assessment:</b>            Uncovering Students Ideas Probe:            1. Health CBA Touring the Systems</p>	<p><b>Key 1:</b> The brain is the central organ of the nervous system</p> <p><b>Key 2:</b> Different types of neurons have different functions: sensations, memory, reactions &amp; reflexes.</p> <p><b>Key 3:</b> Drugs, Alcohol and Illicit substances can affect the brain and the nervous system</p>	<p><b>Focus Content</b>            Systems            Structure and Organization of Living Systems            Nature of Forces            Graph Analysis</p> <p><b>Major Activities</b>  <a href="#">Neuroscience for Kids Website</a>  <a href="#">NSTA Nervous System Guide</a>  <a href="#">Nervous System (Natl. Health School)</a></p> <p>Additional Resources?</p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 20 (Reproductive System — HIV/AIDS &amp; FLASH)</b>                      What is HIV/AIDS?                      What is an STD/STI?                      How do these affect me?</p> <p> <b>Suggested Pacing:</b>                      May 3—11                      (2 instructional weeks)</p> <p><b>Suggested Performance Assessment:</b>                      HIV/AIDS Survey w/ Parent/Guardian Conversation required.</p> <p><b>Suggested Formative Assessment:</b>                      Uncovering Students Ideas Probe:                      1. Catching a Cold (Vol. 4, pg. 125)</p>	<p><b>Key 1:</b> To learn facts about HIV/AIDS and STDs/STIs in order to make informed choices when deciding to engage in sexual activity.</p> <p><b>Key 2:</b> To allow students to ask reasonable questions in a controlled (anonymous) setting relating to sexual health and activity.</p> <p><b>Key 3:</b> To allow students and parents/guardians to interact and develop or ask reasonable questions in a controlled setting relating to sexual health and activity.</p> <p><b>Key 4:</b> HIV/AIDS affects the immune system and prevents the body from being able to effectively fight off diseases; how does the immune system fight diseases</p>	<p><b>Focus Content</b>                      Biodiversity                      Characteristics of Living Organisms                      Life Processes and the Flow of Matter and Energy                      Interdependence of Life                      Human Interaction with the Environment</p> <p><b>Major Activities</b>                      King Co. Dept. Health PPT HIV/AIDS STDs/STIs and other diseases                      HIV/AIDS Survey w/ Parent/Guardian Conversation required.</p> <p>Cf. DNA/Genetics &amp; heredity (genetic traits i.e. Unit 8)</p>
<p><b>WA GLE</b></p>		
<p><b>NSES</b></p>		
<p><b>AAAS</b></p>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 21 (Unit 2 presentations)</b>            How am I connected to the environment?            What can we learn about diseases that human body systems?            What health careers are concerned about the treatment or cure of human disease?</p> <p><b>PACING</b>   <b>Suggested Pacing:</b>            May 12—25            (2 instructional weeks)</p> <p><b>Suggested Performance Assessment:</b></p> <ol style="list-style-type: none"> <li>1. Terrarium/Aquarium</li> <li>2. Research Project on Diseases or Health Care Careers.</li> <li>3. Garden Project</li> <li>4. Science Night</li> </ol> <p><b>Suggested Formative Assessment:</b>            Uncovering Students Ideas Probe:</p>	<p><b>Key 1:</b> Terrarium/Aquarium in order to explain how and why humans are able to interact and influence the environment.</p> <p><b>Key 2:</b> Research Project on Diseases or Health Care Careers in order to research common diseases, drugs and determine their effects on the body; or to determine a health care career and how that would influence students' choice of career.</p> <p><b>OR</b></p> <p><b>Key 3:</b> Scientific Conference Presentation: The purpose of this lesson is for students to assume the role of a scientist and/or health care professional to create a presentation about a related disease and/or research endeavor to the scientific community in the same format that scientists would present their findings at a professional conference.</p>	<p><b>Focus Content</b>            Biodiversity            Characteristics of Living Organisms            Life Processes and the Flow of Matter and Energy            Interdependence of Life            Human Interaction with the Environment</p> <p><b>Major Activities</b>            FOSS Diversity of Life:            Investigation 5 Seeds of Life (Terrarium/Aquarium            STC/MS Human Body Systems:            Anchor Activity — Diseases and Health Careers</p> <p><i><u>Science Night</u></i></p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 22 (Health CBA)</b>            What are short-term effects of drugs and alcohol?            What are the long-term effects of drugs and alcohol?</p> <p><b>PACING</b>   <b>Suggested Pacing:</b>            May 26—28            (3 instructional days)</p> <p><b>Suggested Performance Assessment:</b>            OSPI Health CBA "Sara's Story"</p> <p><b>Suggested Formative Assessment:</b>            Uncovering Students Ideas Probe:</p>	<p><b>Key 1:</b> To asses student understanding of the effects of drugs and alcohol on the body — both short term and long term social, emotional, physical, and mental effects.</p> <p><b>Key 2:</b> To provide students with an opportunity to develop skills to say no to drugs and alcohol in various settings.</p>	<p><b>Focus Content</b>            Drugs, Alcohol, and Controlled Substances (DACS)            Social, Emotional, and Physical effects of DACS            Short-term effects of DACS            Long-term effects of DACS</p> <p><b>Major Activities</b>            OSPI Health CBA "Sara's Story"</p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		

UNIT	KEY CONCEPTS	FOCUS CONTENT AND MAJOR ACTIVITIES
<p><b>Unit 23 (Ethical Dilemmas)</b>            What is ethics? What are some dilemmas that scientists are currently addressing in the community?            (1) Stem Cells; (2) Science and Religion; (3) Vaccine testing.</p> <p><b>PACING</b>   <b>Suggested Pacing:</b>            June 1—22            (3 instructional weeks)</p> <p><b>Suggested Performance Assessment:</b>            Debate of ethical dilemmas in science.</p> <p><b>Suggested Formative Assessment:</b>            Uncovering Students Ideas Probe:</p>	<p><b>Key 1:</b> Ethics is defined as:            (1) a system of moral principles: the ethics of a culture;            (2) the rules of conduct recognized in respect to a particular class of human actions or a particular group, culture, etc.: medical ethics; Christian ethics;            (3) moral principles, as of an individual: His ethics forbade betrayal of a confidence;            (4) that branch of philosophy dealing with values relating to human conduct, with respect to the rightness and wrongness of certain actions and to the goodness and badness of the motives and ends of such actions.</p> <p><b>Key 2:</b> What is a stem cell? How are stem cells used in science? What is the controversy surrounding stem cells and human testing?</p> <p><b>Key 3:</b> Science and Religion often present problems in science.</p> <p><b>Key 4:</b> Vaccine testing of human subjects presents ethical problems in the science community.</p>	<p><b>Focus Content</b>            Biodiversity            Characteristics of Living Organisms            Life Processes and the Flow of Matter and Energy            Interdependence of Life            Human Interaction with the Environment</p> <p><b>Major Activities</b>            YTH Bioengineering            Northwest Assoc. for Biomedical Research (NWABR) Stem Cell Research &amp; Ethics Curriculum</p> <p>NWABR BioEthics 101 Curriculum            Mach 22-26, 2010</p> <p>Islam &amp; Science reading (Discovery)</p>
<b>WA GLE</b>		
<b>NSES</b>		
<b>AAAS</b>		
<b>SECOND MARKING PERIOD ENDS JUNE 22</b>		

**ASSESSMENTS TERM 4:**

1. ***Muscle Fatigue Graph & Analysis Formal Lab (HW)***
2. ***Nervous System Investigation***
3. ***HIV Infection Rate Graph & Analysis (HW)***
4. ***HIV Survey with Parents/Guardians (HW)***
5. ***Terrarium/Aquarium (HW)***
6. ***HBS Research Project Presentation (HW)***
7. ***Health CBA (Test/Quiz)***
8. ***Stem Cell Debate Background Gathering (HW)***
9. ***Ethical Dilemmas Debate (HW)***

**Additional Assessments TERM 4 include:**

1. ***Journal Checks (at least twice)***
2. ***USI Probes before and after each Unit (see each unit for more detail).***