

Science Curriculum Map

Introduction Chapter

<p><u>Standard:</u> HS-LS 2 Ecosystems: Interactions, Energy, and Dynamics</p>	<p><u>Performance Expectation:</u> LS2-6 Evaluate claims, evidence, and reasoning, that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem LS2-2 Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales LS2-8 Evaluate evidence for the role of group behavior on individual and species' chances to survive and reproduce</p>
<p><u>Essential Question:</u> What are the basic components of Environmental Problems?</p>	<p><u>Science and Engineering Practices:</u> Develop and using models. Using mathematics and computational thinking. Constructing Explanations and Designing Solutions.</p>
<p><u>Disciplinary Core Idea:</u> Interdependent relationships in ecosystems. Cycles of matter and energy transfer in ecosystems.</p>	<p><u>Crosscutting Concepts:</u> Cause and effect Scale proportion and quantity Energy and matter Stability and change</p>
<p><u>Resources:</u> See Quivers and Checklist</p>	<p><u>Assessments:</u> Case studies, simulations, quizzes, tests, video and chapter summary sheets, field guide from webquest,</p>
<p><u>Vocabulary:</u> Population Ecological Footprint Community Biosphere Biome Ecosystem Hypoxia Environmental Science Ecology Watershed</p>	

Introduction Checklist

Day 1

Syllabus

Day 2

Green Police Discussion Board _____

Dead Zone Case Study _____

Day 3

The World is Just Awesome Discussion Board _____

Ecology Rules for Life Vod _____

Khan Tragedy of the Commons Vod _____

Day 4

Rewilding Vod on Discussion Board _____

Interpreting Data _____

Day 5

IF- Live Curious Discussion Board _____

Tragedy of the Commons Lab _____

Day 6

Aldo Leopold Vod and Essays _____

Day 7

Why? – Live Curious Discussion Board _____

Value of Species _____

Day 8

Disturbed Discussion Board _____

Ecological Footprint _____

Day 9

Environmental Decision Making _____

Day 10

Ecotourism Case Study _____

Day 11

Home Worksheet _____

Review for Test

Day 12

Finish everything

Review for Test

Day 13

Test Unit 1 _____

Quivers

Intro 2014 Env. Problems

Question

What are the basic components of Environmental Problems?

Investigation

Dead Zone

Video

Green Police, The World is Just Awesome, IF-Live Curious, Why?-Live Curious, Disturbed-Another way to die, Tragedy of Commons, Aldo Leopold, What is Env. Science Rewilding, Home, Ecology - Rules for Life

Elaborate

Tragedy of Commons, Aldo Leopold, Value of Species, Ecological Footprint, Decision Making, Ecotourism

Review

Summary Quiz

Science Curriculum Map

Ecosystems

<p><u>Standard:</u> HS-LS 2 Ecosystems: Interactions, Energy, and Dynamics</p>	<p><u>Performance Expectation:</u> LS2-6 Evaluate claims, evidence, and reasoning, that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions may result in a new ecosystem LS2-2 Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales LS2-8 Evaluate evidence for the role of group behavior on individual and species' chances to survive and reproduce</p>
<p><u>Essential Question:</u> What are biomes, and describe characteristics of common biomes? How do organisms interact within ecosystems? How does energy move through ecosystems?</p>	<p><u>Science and Engineering Practices:</u> Develop and using models. Using mathematics and computational thinking. Constructing Explanations and Designing Solutions.</p>
<p><u>Disciplinary Core Idea:</u> Interdependent relationships in ecosystems. Cycles of matter and energy transfer in ecosystems.</p>	<p><u>Crosscutting Concepts:</u> Cause and effect Scale proportion and quantity Systems and systems models Energy and matter Stability and change</p>
<p><u>Resources:</u> See Quivers and Checklist</p>	<p><u>Assessments:</u> Case studies, simulations, quizzes, tests, video and chapter summary sheets, field guide from webquest,</p>
<p><u>Vocabulary:</u> Community Abiotic Biotic Ecosystem Species Niche Habitat Population Species Producer Consumer</p>	<p>Carnivore Omnivore Predator Prey Scavenger Decomposer Symbiosis Mutualism Commensalism Parasitism Food Chain</p>

Herbivores	Food Web
Trophic Level	Ecological Pyramid
Nutrients	Biomass
Terrestrial	Freshwater
Tundra	Limnology
Temperate Forest	Photic
Grasslands	Aphotic
Chaparral	Wetlands
Desert	Marshes
Tropical Forest	Swamps
Marine	Chemosynthesis
Intertidal	Plankton
Reefs	Climate
Weather	Biodiversity
Dormancy	

Ecosystem Checklist

Day 1

Biome Project

Day 2

Finish Biome Project _____

Day 3

Ecosystem Vod _____

Community Vod _____

Biodiversity Vod _____

Day 4

Sea Lion CS _____

Ch 1 Outline and Review _____

Day 5

MOBOT Biomes _____

Ch 6 Outline and Review _____

Day 6

Ch 7 Outline and Review _____

Start Moose CS

Day 7

Moose CS _____

Ch 8 Outline and Review _____

Day 8

Quiz Section 1 _____

Start Gone Fishing

Day 9

Finish Gone Fishing _____

Ecosystem Change Vod _____

Ecosystem Dynamics Vod _____

Day 10

Ch 2 Outline and Review _____

Limnology _____

Day 11

Ch 9 Outline and Review _____

Review for Quiz 2

Day 12

Quiz Section 2 _____

Start Deforestation CS

Day 13

Finish Deforestation CS _____

Ecosystem Links in a Chain Vod _____

Niche Vod _____

Day 14

Food Web Simulaton _____

Ch 3 Outline and Review _____

Ch 4 Outline and Review _____

Day 15

Start Mono Lake Web

Day 16

Finish Mono Lake Web _____

Ch 5 Outline and Review _____

Day 17

Ch 10 Outline and Review _____

Ch 11 Outline and Review _____

Study for Test

Day 18

Unit Test

Quivers

Question What are biomes, and describe characteristics of common biomes?

Investigation Biome Project

Video Ecosystems, Communities, Biodiversity

Elaborate Sea Lion CS, MOBOT Biomes, Moose CS
Ch 1, Ch 6, Ch 7, Ch 8

Review

Summary Quiz

Quivers

Question How do organisms interact within ecosystems?

Investigation Gone Fishing

Video Ecosystem Change, Ecosystem Dynamics

Elaborate Limnology
Ch 2, Ch 9

Review

Quivers

Question

How does energy move through ecosystems?

Investigation

Deforestation

Video

Links in the Chain, Niche,

Elaborate

Food Web
Sim, Mono
Lake Web
Ch 3, Ch 4, Ch
5, Ch 10, Ch
11

Review

Science Curriculum Map

Cycles of Matter

<p><u>Standard:</u>HS-LS2-3 Ecosystems: Interactions, Energy, and Dynamics</p>	<p><u>Performance Expectation:</u> HS-LS2-3 Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.</p>
<p><u>Essential Question:</u> How are nutrients cycled within ecosystems?</p>	<p><u>Science and Engineering Practices:</u> Developing and Using Models Constructing explanations and designing solutions</p>
<p><u>Disciplinary Core Idea:</u> Cycles of Matter and Energy Transfer in Ecosystems Interdependent Relationships within ecosystems</p>	<p><u>Crosscutting Concepts:</u> Cause and effect Scale proportion and quantity Systems and systems models Energy and matter Stability and change</p>
<p><u>Resources:</u> See Quivers and Checklist</p>	<p><u>Assessments:</u> Case studies, Water shed model, quizzes, tests, video and chapter summary sheets, simulation</p>
<p><u>Vocabulary:</u> Aquifer Biogeochemical cycles Carbon cycle Condensation Groundwater Nitrogen cycle Precipitation Runoff Transpiration Water cycle Cellular respiration Fossil fuel Global warming Greenhouse gas Photosynthesis Acid rain Assimilation denitrification nitrogen fixation</p>	

Cycles of Matter Checklist

Day One

Watershed Activity _____

Biogeology Video _____

Day Two

Biogeochemical Cycles Video _____

Hydrologic Cycle Video _____

Nitrogen Phosphorous Video _____

Day Three

Biogeochemical Cycle Activity _____

TED Carbon Cycle Video _____

Day Four

Climate Change CS _____

Ch 9 Outline and Review _____

Day Five

Greenhouse Sim _____

Ch 10 Outline and Review _____

Ch 11 Outline and Review _____

Day Six

Finish all work

Study for Quiz

Day Seven

Cycling Quiz _____

Study for final

Quivers

Question How is matter cycled within ecosystems?

Investigation Water Shed Activity

Video Biogeology, Biogeochemical Cycles, Hydrologic Cycle
Nitrogen Phosphorous Cycles, TED Carbon Cycle

Elaborate Biogeochemical Cycle Activity, Climate Change CS,
Greenhouse sim, Ch 9, Ch 10, Ch 11

Review

Summary Quiz

Environmental Problems Curriculum Map

Humans and Future

<p><u>Standard:</u> HS-LS2 Ecosystems: Interactions, Energy, and Dynamics</p>	<p><u>Performance Expectation:</u> HS-LS2-7 Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.</p>
<p><u>Essential Question:</u> What are the effects of Air Pollution? What are the effects of Water Pollution? How have humans impacted the environment and how will the future become more sustainable?</p>	<p><u>Science and Engineering Practices:</u> Develop and using models. Using mathematics and computational thinking. Constructing Explanations and Designing Solutions. Engaging in Argument for Evidence</p>
<p><u>Disciplinary Core Idea:</u> Interdependent relationships in ecosystems Ecosystem dynamics, functioning, and resilience Biodiversity and Humans</p>	<p><u>Crosscutting Concepts:</u> Cause and effect Scale, proportion, and quantity Systems and systems models Energy and matter Stability and change</p>
<p><u>Resources:</u> See Quivers and Checklist</p>	<p><u>Assessments:</u> Case studies, simulations, quizzes, tests, video and chapter summary sheets, New Seneca Model, Environmental Impact Statement Analysis,</p>
<p><u>Vocabulary:</u> Biodiversity Extinction Producer Decomposer Niche Nitrogen Fixation Habitat Slash-and-burn Desertification Invasive species Wetland Global Warming Climate Fossil fuels Acid Rain Human Overpopulation Air Pollution</p>	<p>Primary pollutant Secondary pollutant Greenhouse Gases Indoor air pollution Radon VOC Asbestos Eutrophication Algal Bloom Ocean Acidification Aquatic Debris Renewable resource Nonrenewable resource Limited resource Clean Water Act Geothermal</p>

Hydroelectric Biomass	Wind Power Solar
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Humans and Future Checklist

Day 1

Inhaled Dangers Lab _____

Ch 1 Outline and Review _____

Day 2

Air Quality Trends _____

Ch 2 O and R _____

Ch 3 O and R _____

Day 3

Air Video _____

Day 4

Air Pollution Disasters _____

Ch 4 O and R _____

Day 5

Temp Inversion Demo _____

Ch 5 O and R _____

Ch 6 O and R _____

Day 6

Review

Finish all work

Day 7

Quiz Air Pollution _____

Ch 7 O and R _____

Ch 8 O and R _____

Day 8

Water Pollution Disaster/ Bottled Water Case Study _____

Ch 9 O and R _____

Day 9

Water Pollution Project _____

Day 10

Water Use Case Study _____

Review for Quiz

Day 10

Water Pollution Quiz _____

Human Impacts Video _____

Virtual Energy and Water _____

Day 11

Prudhoe Bay EIS _____

Day 12

Energyville _____

Day 13

New Seneca _____

Review for Unit Test

Day 14

Unit Test

Quivers

Question

What are the effects of Air Pollution?

Investigation

Inhaled Dangers

Video

Air: The Search for One Clean Breathe, Pollution Video

Elaborate

Ch 1,2,3,4,5,6, Air Quality Trends, Air Pollution Disasters, Temperature Inversion Demo,

Question

What are the effects of Water Pollution?

Investigation

Water Pollution Disaster/ Bottled Water Case Study

Video

Elaborate

Ch 7,8,9, Water Pollution Project, Water Use CS

Question

How have humans impacted the environment and how will the future become more more sustainable?

Investigation

Prudhoe Bay, EIS

Video

Human Impacts, Virtual Energy and Water

Elaborate

Energyville, New Seneca