

SCOPE AND SEQUENCE

COURSE TITLE: Environmental Science (Trimester 1)

UNIT/TOPI C	RESOUR CES/ CHAPTE RS	Essential Learning Outcomes/ I can Statements	ACTIVITIES/ HOW	ASSESS MENT	Standards/Bench marks	Technol ogy Integrat ed
Science and the Environment	Chapter 1	<p>1) Students will understand what the goal of environmental science is.</p> <p>2) Students will understand the basic units of an ecosystem.</p> <p>3) Students will understand what an ecological footprint is.</p> <p>4) Students will understand the impact the agricultural and industrial revolution have had.</p> <p>5) Students will understand the difference between a developed and undeveloped country.</p>	<p>1) Powerpoint Notes chapter 1</p> <p>2) Chapter 1 worksheets</p> <p>3) Ecosystem Lab</p> <p>4) Discussion</p> <p>5) informal questioning</p>	<p>1) Chapter 1 Test</p> <p>2) Chapter 1 notes quizzes</p> <p>3) Discussion</p> <p>4) informal questioning</p>	<p>9.1.3.1.1 Describe a system, including specifications of boundaries and subsystems, relationships to other systems, and identification of inputs and expected outputs.</p> <p><i>For example: A power plant or ecosystem.</i></p> <p>9.1.3.1.2 Identify properties of a system that are different from those of its parts but appear because of the interaction of those parts.</p> <p>9.1.3.4.2 Determine and use appropriate safety procedures, tools, computers and measurement instruments in science and engineering contexts.</p> <p><i>For example:</i> Consideration of chemical and biological hazards in the lab.</p> <p>9.1.3.4.3 Select and use appropriate numeric, symbolic, pictorial, or</p>	<p>1) PowerPoint</p> <p>2) Moodle</p> <p>3) Chromebooks</p>

					graphical representation to communicate scientific ideas, procedures and experimental results.	
Evolution and Classification	Chapter 4	<p>1) Students will understand what evolution is and the theory of natural selection.</p> <p>2) Students will understand the levels of classification.</p>	<p>1)Powerpoint Notes Chapter 4</p> <p>2) Chapter 4 worksheets</p> <p>3) Natural Selection Lab</p> <p>4) Discussion</p> <p>5) informal questioning</p>	<p>1) Chapter 4 test</p> <p>2) Chapter 4 notes quizzes</p> <p>3) Discussion</p> <p>4) informal questioning</p>	<p>9.1.3.4.3 Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas, procedures and experimental results.</p> <p>9.4.3.3.1 Describe how evidence led Darwin to develop the theory of natural selection and common descent to explain evolution.</p> <p>9.4.3.3.3 Recognize that artificial selection has led to offspring through successive generations that can be very different in appearance and behavior from their distant ancestors.</p> <p>9.4.3.3.4 Explain why genetic variation within a population is essential for evolution to occur.</p> <p>9.4.3.3.5 Explain how competition for finite resources and the changing environment promotes natural selection on offspring</p>	<p>1) PowerPoint</p> <p>2) Moodle</p> <p>3) Chromebooks</p>

					survival, depending on whether the offspring have characteristics that are advantageous or disadvantageous in the new environment.	
Biomes	Chapter 6	<p>1) Students will understand what a biome is.</p> <p>2) Students will understand how climate affects plant growth.</p> <p>3) Students will understand how latitude and longitude affect biomes.</p> <p>4) Students will identify the biomes of Minnesota.</p> <p>5) Students will identify the many world biomes.</p>	<p>1) Powerpoint notes chapter 6</p> <p>2) Chapter 6 worksheets</p> <p>3) Biome poster</p> <p>4) Discussion</p> <p>5) informal questioning</p>	<p>1) Chapter 6 test</p> <p>2) Chapter 6 notes quizzes</p> <p>3) Biome poster presentation</p> <p>4) Discussion</p> <p>5) informal questioning</p>	<p>9.1.3.1.1</p> <p>Describe a system, including specifications of boundaries and subsystems, relationships to other systems, and identification of inputs and expected outputs.</p> <p><i>For example:</i> A power plant or ecosystem.</p> <p>9.1.3.1.2</p> <p>Identify properties of a system that are different from those of its parts but appear because of the interaction of those parts.</p>	<p>1) PowerPoint</p> <p>2) Moodle</p> <p>3) Chromebooks</p> <p>4) Internet search engines</p>
Aquatic Ecosystems	Chapter 7	<p>1) Students will understand the difference between a freshwater and saltwater ecosystem.</p> <p>2) Students will understand the characteristics of an aquatic ecosystem.</p> <p>3) Students will understand how nutrients affect a lake.</p> <p>4) Students will understand the human impact on wetlands.</p>	<p>1) Powerpoint notes chapter 7</p> <p>2) Chapter 7 worksheets</p> <p>3) Ocean water lab</p> <p>4) Pond water lab</p> <p>5) Discussion</p> <p>6) informal questioning</p>	<p>1) Chapter 7 test</p> <p>2) Chapter 6 notes quizzes</p> <p>3) Discussion</p> <p>4) informal questioning</p>	<p>9.1.3.1.1</p> <p>Describe a system, including specifications of boundaries and subsystems, relationships to other systems, and identification of inputs and expected outputs.</p> <p><i>For example:</i> A power plant or ecosystem.</p> <p>9.1.3.1.2</p> <p>Identify properties of a system that are different from those of its parts but appear because of the interaction of those parts.</p>	<p>1) PowerPoint</p> <p>2) Moodle</p> <p>3) Chromebooks</p>

					<p>9.1.3.4.2 Determine and use appropriate safety procedures, tools, computers and measurement instruments in science and engineering contexts.</p> <p><i>For example:</i> Consideration of chemical and biological hazards in the lab.</p> <p>9.1.3.4.3 Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas, procedures and experimental results.</p>	
Populations	Chapter 8 & 9	<p>1) Students will understand the properties of populations.</p> <p>2) Students will be able to calculate population growth.</p> <p>3) Students will understand the difference between exponential growth and logistic growth.</p> <p>4) Students will understand what a carrying capacity is.</p> <p>5) Students will be able to describe how species interact.</p> <p>6) Students will be able to describe how population size can be forecasted.</p>	<p>1) Powerpoint notes chapter 8 & 9</p> <p>2) Chapter 8 Worksheets</p> <p>3) Chapter 9 worksheets</p> <p>4) population trends lab</p> <p>5) Discussion</p> <p>6) informal questioning</p>	<p>1) Chapter 8/9 Test</p> <p>2) Chapter 8 & 9 notes quizzes</p> <p>3) Discussion</p> <p>4) informal questioning</p>	<p>9.1.3.3.1 Describe how values and constraints affect science and engineering.</p> <p><i>For example:</i> Economic, environmental, social, political, ethical, health, safety and sustainability issues.</p> <p>9.1.3.4.3 Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas, procedures and experimental results.</p> <p>9.4.2.1.1 Describe factors that affect the carrying</p>	<p>1) PowerPoint</p> <p>2) Moodle</p> <p>3) Chromebooks</p>

		<p>7) Students will understand how changes in populations occur.</p> <p>8) Students will understand the size and growth of the human population.</p>			<p>capacity of an ecosystem and relate these to population growth.</p> <p>9.4.2.1.2 Explain how ecosystems can change as a result of the introduction of one or more new species.</p> <p><i>For example:</i> The effect of migration, localized evolution or disease organisms.</p>	
Biodiversity	Chapter 10	<p>1) Students will be able to describe the diversity numbers of different organisms.</p> <p>2) Students will understand the levels of diversity.</p> <p>3) Students will understand how biodiversity is at risk.</p> <p>4) Students will understand the difference between an endangered and threatened species.</p> <p>5) Students will understand how humans cause extinction.</p> <p>6) Students will learn the areas of the world that are critical for biodiversity.</p> <p>7) Students will understand the ways humans are ensuring the preservation of biodiversity.</p>	<p>1) Powerpoint notes chapter 10</p> <p>2) Chapter 10 Worksheets</p> <p>3) Biodiversity field guides worksheet</p> <p>4) Environment movie</p> <p>5) Discussion</p> <p>6) informal questioning</p>	<p>1) Chapter 10 test</p> <p>2) Chapter 10 notes quizzes</p> <p>3) Discussion</p> <p>4) informal questioning</p>	<p>9.1.3.4.3 Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas, procedures and experimental results.</p> <p>9.4.2.1.1 Describe factors that affect the carrying capacity of an ecosystem and relate these to population growth.</p> <p>9.4.2.1.2 Explain how ecosystems can change as a result of the introduction of one or more new species.</p> <p><i>For example:</i> The effect of migration, localized evolution or disease organisms.</p>	<p>1) PowerPoint</p> <p>2) Moodle</p> <p>3) Chromebooks</p>

SCOPE AND SEQUENCE

COURSE TITLE: Environmental Science (Trimester 2)

UNIT/TOPIC	RESOURCES/ CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	Standards/Benchmarks	Technology Integrated
Water	Chapter 11	1) Students will understand the parts of the water cycle. 2) Students will understand the global water distribution. 3) Students will understand how was is used globally. 4) Students will learn why water conservation is important and how it is done. 5) Students will understand the different types of pollution and how it affects water. 6) Students will learn how water pollution is cleaned up.	1) Powerpoint notes chapter 11 2) Chapter 11 Worksheets 3) Oil Spill Lab 4) Discussion 5) informal questioning	1) Chapter 11 Test 2) Chapter 11 notes quizzes 3) Discussion 4) informal questioning	9.1.3.4.1 Describe how technological problems and advances often create a demand for new scientific knowledge, improved mathematics and new technologies. 9.1.3.4.2 Determine and use appropriate safety procedures, tools, computers and measurement instruments in science and engineering contexts. <i>For example:</i> Consideration of chemical and biological hazards in the lab. 9.1.3.4.3 Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas, procedures and experimental results.	1) PowerPoint 2) Moodle 3) Chromebooks
Air Pollution	Chapter 12	1) Students will understand what air pollution is and what causes it.	1) Powerpoint notes chapter 12 2) Chapter 12 Worksheets 3) Chapter 12 Lab	1) Chapter 12 Test 2) Chapter 12 notes quizzes	9.1.3.3.1 Describe how values and constraints affect science and engineering.	1) PowerPoint 2) Moodle

		<p>2) Students will know what the Clean Air Act is.</p> <p>3) Students will understand the long term health effects of air pollution.</p> <p>4) Students will understand what indoor air pollution is.</p> <p>5) students will understand what radon and asbestos are and what they cause.</p> <p>6) Students will understand what acid precipitation is.</p>	<p>4) Discussion</p> <p>5) informal questioning</p>	<p>3) Discussion</p> <p>4) informal questioning</p>	<p><i>For example:</i> Economic, environmental, social, political, ethical, health, safety and sustainability issues.</p> <p>9.1.3.4.1 Describe how technological problems and advances often create a demand for new scientific knowledge, improved mathematics and new technologies.</p> <p>9.1.3.4.2 Determine and use appropriate safety procedures, tools, computers and measurement instruments in science and engineering contexts.</p> <p><i>For example:</i> Consideration of chemical and biological hazards in the lab.</p> <p>9.1.3.4.3 Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas, procedures and experimental results.</p>	<p>3) Chromebooks</p>
<p>Atmosphere and Climate Change</p>	<p>Chapter 13</p>	<p>1) Students will understand the difference between weather and climate.</p> <p>2) Students will understand what factors</p>	<p>1) Powerpoint notes chapter 13</p> <p>2) Chapter 13 worksheets</p> <p>3) ozone lab</p>	<p>1) Chapter 13 Test</p> <p>2) Chapter 13 notes quizzes</p> <p>3) Discussion</p>	<p>9.1.3.3.1 Describe how values and constraints affect science and engineering.</p> <p><i>For example:</i> Economic, environmental, social, political, ethical, health,</p>	<p>1) PowerPoint</p> <p>2) Moodle</p> <p>3) Chromebook</p> <p>1) PowerPoint</p>

		<p>on earth influence climate.</p> <p>3) Students will distinguish between el nino and la nina.</p> <p>4) Students will understand what the ozone shield is and how there is a hole in the ozone layer..</p> <p>5) Students will understand what global warming is and what causes it.</p> <p>6) Students will understand the effects of global warming throughout the world.</p>	<p>4) Warroad Climate Change activity</p> <p>5) Discussion</p> <p>6) informal questioning</p>	<p>4) informal questioning</p>	<p>safety and sustainability issues.</p> <p>9.1.3.4.1 Describe how technological problems and advances often create a demand for new scientific knowledge, improved mathematics and new technologies.</p> <p>9.1.3.4.2 Determine and use appropriate safety procedures, tools, computers and measurement instruments in science and engineering contexts.</p> <p><i>For example:</i> Consideration of chemical and biological hazards in the lab.</p> <p>9.1.3.4.3 Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas, procedures and experimental results.</p>	<p>2) Moodle</p> <p>3) Chromebooks</p> <p>4) Google docs and sheets</p>
Land	Chapter 14	<p>1) Students will distinguish between rural and urban land.</p> <p>2) Students will understand the different categories of rural land.</p> <p>3) Students will understand what deforestation is.</p>	<p>1) Powerpoint notes chapter 14</p> <p>2) Chapter 14 worksheets</p> <p>3) land-use model lab</p> <p>4) Discussion</p> <p>5) informal questioning</p>	<p>1) Chapter 14 Test</p> <p>2) Chapter 14 notes quizzes</p> <p>4) Discussion</p> <p>5) informal questioning</p>	<p>9.1.3.4.1 Describe how technological problems and advances often create a demand for new scientific knowledge, improved mathematics and new technologies.</p>	<p>1) PowerPoint</p> <p>2) Moodle</p> <p>3) Chromebooks</p>

		<p>4) Students will understand what parks and preserves are and what they do for the environment.</p> <p>5) students will know what the US Wilderness Act is.</p> <p>6) Students will understand the benefits and threats to protected wilderness areas.</p>			<p>9.1.3.4.3</p> <p>Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas, procedures and experimental results.</p>	
<p>food and agriculture</p>	<p>Chapter 15</p>	<p>1) Students will understand how modern agriculture provides most of the world's food.</p> <p>2) Students will understand how consuming large amounts of meat is bad for the environment.</p> <p>3) Students will understand the food problems in the world.</p> <p>4) Students will understand how the overuse of fertilizers has a negative impact on the environment.</p> <p>5) Students will distinguish the difference between fertile soil and land degradation.</p> <p>6) Students will understand what a pesticide is and the negative impact of overuse.</p> <p>7) Students will learn what genetic engineering is in terms of agriculture.</p> <p>8) Students will learn what the practice of organic farming is.</p>	<p>1) Powerpoint notes chapter 15</p> <p>2) Chapter 15 Worksheets</p> <p>3) Pesticide pollution lab</p> <p>4) Discussion</p> <p>5) informal questioning</p>	<p>1) Chapter 15 Test</p> <p>2) Chapter 15 notes quizzes</p> <p>3) Discussion</p> <p>4) informal questioning</p>	<p>9.1.3.4.1</p> <p>Describe how technological problems and advances often create a demand for new scientific knowledge, improved mathematics and new technologies.</p> <p>9.1.3.4.2</p> <p>Determine and use appropriate safety procedures, tools, computers and measurement instruments in science and engineering contexts.</p> <p><i>For example:</i> Consideration of chemical and biological hazards in the lab.</p> <p>9.1.3.4.3</p> <p>Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas, procedures and experimental results.</p>	<p>1) PowerPoint</p> <p>2) Moodle</p> <p>3) Chromebooks</p>

Renewable and nonrenewable resources	Chapter 17 & 18	<p>1) Students will understand the many types of renewable resources.</p> <p>2) Students will learn about alternative types of energy.</p> <p>3) Students will learn about conservation of energy.</p> <p>4) Students will learn how to calculate energy efficiency.</p> <p>5) Students will understand what a fossil fuel is and the many types.</p> <p>6) Students will understand what fuels are used for.</p> <p>7) Students will understand the future of fossil fuels.</p> <p>8) Students will understand the production and use of nuclear energy.</p>	<p>1) Powerpoint notes Chapters 17 & 18</p> <p>2) Chapter 17 and 18 Worksheets</p> <p>3) Calories in sunlight lab.</p> <p>4) Discussion</p> <p>5) informal questioning</p>	<p>1) Chapter 18/19 Test</p> <p>2) Chapter 18/19 notes quizzes</p> <p>3) Discussion</p> <p>4) informal questioning</p>	<p>9.1.3.3.1 Describe how values and constraints affect science and engineering.</p> <p><i>For example:</i> Economic, environmental, social, political, ethical, health, safety and sustainability issues.</p> <p>9.1.3.4.3 Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas, procedures and experimental results.</p>	<p>1) PowerPoint</p> <p>2) Moodle</p> <p>3) Chromebooks</p>
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