

NGSS INTEGRATED SEMESTER

Semester Overview	USING CLIMATE AND ENERGY DATA TO DESIGN ENVIRONMENTAL SOLUTIONS					
	UNIT 1 Energy and Climate 20 lessons	UNIT 2 Weather, Climate and Life 44 lessons	UNIT 3 Energy Tracker 20 lessons			
Challenge	Ask scientific questions to make discoveries.	Use weather and climate information to protect a plant or animal species	Lower the energy use in your home to reduce climate change			
Phenomena	The Earth's climate is changing in unexpected ways.	Weather changes create more challenging living conditions for plants and animals.	Home energy data is a largely unexplored resource for understanding behavior			
Projects	Design and test a home that minimizes heat loss.	Collect and analyze weather and climate data from three cities.	Design a more efficient wind turbine			
Culminating Experience	Students create a proposal that describe methods to answer questions about climate change.	Students present on the designs they created to protect a plant or animal species.	Students present on the success of their designs to reduce energy use in their home.			
NGSS STANDARDS						
Performance Expectations	ESS3-5, PS3-3	ESS2-5, ESS2-6, LS1-4, LS1-5	ESS3-3, ETS1-1, ETS1-2, ETS1-3, ETS1-4			
Science & Engineering Practices	<ul style="list-style-type: none"> • Asking questions and defining problems • Constructing explanations and designing solutions 	<ul style="list-style-type: none"> • Planning and carrying out investigations • Developing and using models • Engaging in argument from evidence • Constructing explanations and designing solutions 	<ul style="list-style-type: none"> • Constructing explanations and designing solutions • Asking questions and defining problems • Developing and using models • Analyzing and interpreting data • Engaging in argument from evidence 			
Disciplinary Core Ideas	ESS3.D Global Climate Change PS3.A Definition of energy PS3.B Conservation of Energy and Energy Transfer ETS1.A Defining and delimiting an engineering problem ETS1.B Developing possible solutions	ESS2.C The roles of water in Earth's surface processes ESS2.D Weather and Climate LS1.B Growth and development of organisms	ESS3.C Human impacts on earth systems ETS1.A Defining and delimiting engineering problems ETS1.B Developing possible solutions ETS1.C Optimizing the design solution			
Crosscutting Concepts	<ul style="list-style-type: none"> • Stability and change • Energy and matter 	<ul style="list-style-type: none"> • Cause and effect • Systems and system models 	<ul style="list-style-type: none"> • Cause and effect • Influence of science, engineering, and technology on society and the natural world 			
SEMESTER LESSON SEQUENCE						
Unit 1: Lessons 1 – 20	Unit 3 (1 – 10)	Unit 2: Lessons 1 – 15	Unit 3 (11-15)	Unit 2 (16-25)	Unit 3 (16-20)	Unit 2: Lessons 26 – 44