Teacher: CORE AP Environmental Science	Year: 2017-18
Course: AP Environmental Science	Month: All Months

Summer Science Review & Outline Environmental Problems, Their Causes, & Sustainability Ch 1,24	Review Supplemental Material Outline Ch 1,24						
Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
What is the tragedy of the commons?	Environmental Problems, Their Causes, & Sustainability - Ch's1, 24,	Analyzing data	biodiversity				5.B.3-Â Future energy needs
What are some basic ecological, chemistry and earth science principals?		Scenario outcome prediction	culture				6.C-Â Economics Impacts (Cost-benefit analysis; externalities; marginal costs; sustainability)
Why is sustainability essential for the future?	Issues, causes, scientific principles of sustainability, environmental worldviews	Understand sustainable development	sustainable				7.C.2-Â Maintenance through conservation
How does politics play a role in the environment?		Be able to identify various environmental worldviews	renewable				4.G-Â Global Economics (Globalization; World Bank; Tragedy of the commons; relevant laws and treaties)
	Individual worldview ideas and rule of 70 concept.	be able to analyze their role and the role of education in a sustainable future.	stewardship				
			lobbying				
			democracy				
			civil suits				
			plaintiff				
			policy				
			politics				
			Ethics				

Ecosystems â€“ What are they/How do they work? ~	Chapter 3						
Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
What do scientists do?	The nature of science	To be able to understand how the scientific method works.	acidity				2.B-Â Energy Flow (Photosynthesis and cellular respiration; food webs and trophic levels; ecological pyramids)
What is matter and energy?	Matter and energy	To be able to gather data objectively, analyze it and come to a conclusion.	chromosome				5.A-Â Energy Concepts (Energy forms; power; units; conversations; Laws of Thermodynamics)
How do systems respond to change?	Laws of Thermodynamics	To be able to analyze various forms of matter and energy understand how they are related.	law of conservation				
	Trophic transfer		tipping point				
	Food Webs		pH				
			negative feedback loop				
			scientific law				
			scientific hypothesis				
What keeps organisms alive?	Ecology	To be able to analyze various ecosystems and infer how energy and matter transfers.	biotic				2.B-Â Energy Flow (Photosynthesis and cellular respiration; food webs and trophic levels; ecological pyramids)
What is an ecosystem and how do we analyze them?	Ecosystems		abiotic				2.C-Â Ecosystem Diversity (Biodiversity; natural selection; evolution; ecosystem services)
	Energy transfer in ecosystems		gross primary productivity				2.E-Â Natural Biogeochemical Cycles (Carbon, nitrogen, phosphorus, sulfur, water, conservation of matter)
	Biogeochemical Cycles		detrivores				
			phosphorous cycle				
			energy pyramids				
			tertiary consumers				
Water Quality Index & Native Food Webs	Field Trip To Upper Schuylkill		trophic levels				
			net primary productivity				

Biodiversity/ Evolution/Species Interaction	Chapter 4/5 (7-10 selected)						
Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
What is biodiversity and why is it important?	Biodiversity	How to analyze an ecosystems biodiversity	adaptation				2.A-Â Ecosystem Structure (Biological populations and communities; ecological niches; interactions among species; keystone species; species diversity and edge effects; major terrestrial and aquatic biomes)
How does life change over time?	Evolution	To be able to infer a species role in an ecosystem	adaptive traut				2.B-Â Energy Flow (Photosynthesis and cellular respiration; food webs and trophic levels; ecological pyramids)
How do humans affect species diversity?	Natural selection	To be able to understand and indicate the significance of biodiversity	foundation species				2.C-Â Ecosystem Diversity (Biodiversity; natural selection; evolution; ecosystem services)
	Geologic processes		endemic species				2.D-Â Natural Ecosystem Change (Climate shifts; species movement; ecological succession)
	Niches		keystone species				7.C-Â Loss of Biodiversity
			evolution				7.C.1-Â Habitat loss; overuse; pollution; introduced species; endangered and extinct species
			speciation				
How do species interact?	food chains	To be able to analyze population dynamics	age structure				2.C-Â Ecosystem Diversity (Biodiversity; natural selection; evolution; ecosystem services)
What limits population growth?	invasive species	To be able to infer food chains and invasive species within them	ecological succession				2.D-Â Natural Ecosystem Change (Climate shifts; species movement; ecological succession)
How do communities respond to changes?	population dynamics		population crash				3.A-Â Population Biology Concepts (Population ecology; carrying capacity; reproductive strategies; survivorship)
	Community Relationships		limiting factor principle				3.B.2-Â Population Size (Strategies for sustainability; case studies; national policies)
			parasitism				
			resilience				
			resource partitioning				

Human Population & Impact ~	Chapter 6						
Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
What impact have humans had on earth?	Human Population Growth		eutrophication				3.A-Â Population Biology Concepts (Population ecology; carrying capacity;
			unsustainable				4.5.12.A. Research how technology influences the sustainable use of natural resources. • Analyze how consumer demands drive the development of technology enabling the sustainable use of natural resources.
	Human impact		logistic				
	Logistic vs Exponential growth		exponential				
Soil, Food and Pest Management	Chapter 12						
Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
How is our food produced?	Soil formation		IPM				4.4.10.B. Analyze the effects of agriculture on a society's economy, environment, standard of living, and foreign trade.
What is the impact of food production on the environment?	food management		weathering				4.4.12.B. Research and evaluate laws and policies that affect the food and fiber system.
How does soil form and what are its properties?	industrialized agriculture		TSCA				4.5.12.B. Evaluate pest management using methods such as cost/benefit analysis, cumulative effects analysis, environmental impact analysis, ethical analysis, and risk analysis.
			USDA/FDA				
			dust bowl				
Midterm - Midterm Review							
Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards

Solid & Hazardous Waste /Waste Water Treatment	Chapter 21 (parts of 20)						
Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
What is wastewater and Why must we treat wastewater?			sewage				Evaluate waste management practices. • Analyze current solid waste regulations. • Research the impact of new and emerging technologies in the use, reuse, recycling and disposal of materials. • Evaluate ways that waste could be reduced during the production of specific product.
What is the process for dealing with solid and hazardous wastes?			biosolid				
			biomagnification				
			incineration				
Water & Water Pollution ~	Chapters 13 & 20						
Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
What is water pollution and how does it affect the environment?							4.5.12.C. Analyze the costs and benefits of means to control pollution. • Analyze the role of technology in the reduction of pollution. • Research and analyze the local, state, and national laws that deal with point and nonpoint source pollution. • Explain mitigation and its role in maintaining environmental health.
What are strategies for preventing water pollution?							
What available water resources exist?							

Energy Efficiency, Renewable Energy & Geology, Non Renewable Resources ~	Chapters14, 15 & 16						
Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
What is a renewable resource?			renewable				4.3.12.A. Evaluate the advantages and disadvantages of using renewable and nonrenewable resources. • Explain how consumption rate affects the sustainability of resource use. • Evaluate the advantages and disadvantages of using renewable resources such as solar power, wind power, and biofuels.
How can energy efficiency be improved?			nonrenewable				
What energy resources does earth have and how do they form?			plate tectonics/orogenesis				
How do rocks form and what is their value?			hydrocarbons/fossil fuels				
			efficiency				
Air Pollution & Climate Disruption, Ozone Depletion ~	Chapter 18 & 19						
Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
How does air pollution form and what are its hazards?			ozone				4.5.12.C. Analyze the costs and benefits of means to control pollution. • Analyze the role of technology in the reduction of pollution. • Research and analyze the local, state, and national laws that deal with point and nonpoint source pollution. • Explain mitigation and its role in maintaining environmental hea
What is the effect of air pollution?			PAN				
How can air pollution be remediated?			SPM <2.5m				

AP Exam Review and AP Exam	AP EXAM FIRST MONDAY IN MAY						
Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
NA							
Organic Gardening/ Sustainability Project Summative							
Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
What is USDA organic?			organic				4.1.12.C. Research how humans affect energy flow within an ecosystem. • Describe the impact of industrial, agricultural, and commercial enterprises on an ecosystem.
How can organic farming improve air and water pollution?			industrialized				
Energy Commercial Pro/Con Project Summative							
Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
What are the pros/cons of sustainable energy?			hydroelectric				4.3.12.A. Evaluate the advantages and disadvantages of using renewable and nonrenewable resources. • Explain how consumption rate affects the sustainability of resource use. • Evaluate the advantages and disadvantages of using renewable resources such as solar power, wind power, and biof
What are the pros/cons of conventional energy sources?			tidal				
			petroleum				
			fossil fuel				
			geothermal				

Change.Org Petition Project							
Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
What is the most effective way to enact environmental improvements?	Social Media vs Traditional Political Action's effectiveness		petition				4.1.12.E. Research solutions addressing human impacts on ecosystems over time.
			social pressure				
			voting with your wallet				
Final Review/Final Exam							
Essential Questions	Content	Knowledge and Skills	Vocabulary	Assessments	Lessons	Resources	Standards
NA/Various							