

Quarter 1

Week	# Days	Unit	Topics by week	Lab or Simulation
1	5	Unit 0	APES Big Ideas, Scientific Thinking, Dimensional Analysis, Feedback Loops, Tragedy of the Commons & Collapse of Societies	Tragedy of the Commons Lab Life in a Drop of Pond Water (SO) Dollar Voting (SO) Animal Communication (SO)
2	5	Unit 1 (11)	1.1 Introduction to Ecosystems 1.2 Terrestrial Biomes 1.3 Aquatic Biomes	Ecocolumns (ongoing project/lab) Photosynthesis (SO) Local Tree/Plant Identification (SO)
3	5		1.4 The Carbon Cycle 1.5 The Nitrogen Cycle 1.6 The Phosphorus Cycle 1.7 The Hydrologic (Water) Cycle 1.8 Primary Productivity	Primary Productivity Lab (CB) Carbon Cycle (SO) Nitrogen Cycle (SO) Dorito Calorimetry (SO) GPP, Respiration, NPP (SO)
4	5		1.9 Trophic Levels 1.10 Energy Flow and the 10% Rule 1.11 Food Chains and Food Webs	Owl Pellet Dissection Lab Nature's Seeds Lab
5	4		2.1 Introduction to Biodiversity 2.2 Ecosystem Services 2.3 Island Biogeography	Soil Your Drawers (SO) Leaf Shape in Sassafras Trees (SO) Species Diversity Lab (CB) Birdfeeder Biodiversity (SO)
6	5	Unit 2 (7)	2.4 Ecological Tolerance 2.5 Natural Disruptions to Ecosystems	Island Biogeography Lab Habitat Loss & Transformation Lab (CB) Benthic Macroinvertebrate Diversity & Water Quality (SO)
7	5		2.6 Adaptations 2.7 Ecological Succession	Population Studies Lab Natural Selection (SO)
8	5	Unit 3 (9)	3.1 Generalist and Specialist Species 3.2 K-Selected vs. r-selected Species 3.3 Survivorship Curves	Bubble Survivorship Lab Predator/Prey (SO)
9	4		3.4 Carrying Capacity 3.5 Population Growth & Resource Availability 3.6 Age Structure Diagrams	Cemetery Demographics Lab (CB) Quadrant Sampling (SO) Pasta Transect (SO) Estimating Population Size Using the Lincoln Index (SO)

Fall Break

Quarter 2

10	5	Unit 3 (9)	3.7 Total Fertility Rate 3.8 Human Population Dynamics 3.9 Demographic Transition	Exploring the Demographic Transition Model with Gapminder (SO) GDP and Human Demographics (SO)
11	5	Unit 4 (9)	Geology Review 4.1 Plate Tectonics	Geology Lab Stations Geologic Time Scale (SO) Plate Tectonics (SO)
12	5		4.2 Soil Formation and Erosion 4.3 Soil Composition and Properties	Soil Lab Soil Particle Composition (SO) Soil Profiling (SO) Soil Properties and Macronutrients (SO) Topsoil vs Subsoil (SO)
13	4		4.4 Earth's Atmosphere 4.5 Global Wind Patterns 4.6 Watersheds	Coriolis Effect and Atmospheric Circulation Lab Global Wind Patterns (SO)
14	5		4.7 Solar Radiation and Earth's Seasons 4.8 Earth's Geography and Climate 4.9 El Niño and La Niña	Angle of Solar Incidence (SO) Earth's Seasons (SO) Tree Rings and Climate Change Lab Specific Heat of Soil vs. Water (SO)
15	2	Unit 5 (Part 1: Topics 5.1-5.12)	5.1 The Tragedy of the Commons 5.2 Clearcutting 5.3 The Green Revolution	Trees and Forests Lab Calculating Stream Discharge (SO) How Much Space is Required to Feed You? (SO)
16	5		5.4 Impacts of Agricultural Practices 5.5 Irrigation Methods 5.6 Pest Control Methods	Salinization Lab Root Length in Grasses (SO)
17	5		5.7 Meat Production Methods 5.8 Impacts of Overfishing	Bycatch Engineering Design Lab
18	5		5.9 Impacts of Mining 5.10 Impacts of Urbanization 5.11 Ecological Footprints 5.12 Introduction to Sustainability	Cookie Mining Lab Virtual Mining (SO) Copper Extraction (SO) Ecological Footprint (SO)
19	4		Final Exam	Final Exam

Winter Break

20	4	Unit 5 (Part 2: Topics 5.13-5.17)	5.13 Methods to Reduce Urban Runoff 5.14 Integrated Pest Management 5.15 Sustainable Agriculture 5.16 Aquaculture 5.17 Sustainable Forestry	CC & Cities Experimental Design Lab
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Week	# Days	Unit	Topics by week	Lab or Simulation	
Quarter 3	21	Unit 6 (13)	6.1 Renewable & Nonrenewable Resources 6.2 Global Energy Consumption 6.3 Fuel Types and Uses	Kill-A-Watt Lab Electricity (SO) Build a Simple Electricity Generator (SO) Energy Efficiency (SO)	
	22		6.4 Distribution of Natural Energy Resources 6.5 Fossil Fuels 6.6 Nuclear Power	Energy Audit (SO)	
	23		6.7 Energy from Biomass 6.8 Solar Energy 6.9 Hydroelectric Power	How Many Solar Panels (SO) Solar Oven (SO) Desalination (SO)	
	24		6.10 Geothermal Energy 6.11 Hydrogen Fuel Cell 6.12 Wind Energy 6.13 Energy Conservation	Geothermal Heat Exchange Lab (CB) The Global Cooling Problem (SO)	
	25	Unit 7 (8)	7.1 Introduction to Air Pollution 7.2 Photochemical Smog 7.3 Thermal Inversion 7.4 Atmospheric CO <sub>2</sub> and Particulates	Particulates Experimental Design Lab Particulate Air Pollution (SO) Air Pollution Modeling (SO) Automobile Exhaust (SO) Photochemical Smog (SO) Thermal Inversion (SO)	
	26		7.5 Indoor Air Pollutants 7.6 Reduction of Air Pollutants 7.7 Acid Rain 7.8 Noise Pollution	Tropospheric Ozone Virtual Picture Lab Acid Precipitation (SO) Acid Rain (SO) Acid Deposition (SO) Noise Pollution (SO)	
	27	Unit 8 (15)	8.1 Sources of Pollution 8.2 Human Impacts on Ecosystems 8.3 Endocrine Disruptors 8.4 Human Impacts on Wetlands & Mangroves	Water Quality Testing Lab Deepwater Horizon Oil Spill Cleanup (SO)	
	28		8.5 Eutrophication 8.6 Thermal Pollution 8.7 Persistent Organic Pollutants (POPs) 8.8 Bioaccumulation & Biomagnification	Biomagnification Lab Fecal Coliform Bacteria (SO) Eutrophication (SO) Bioaccumulation and Biomagnification (SO)	
	29		8.9 Solid Waste Disposal 8.10 Waste Reduction Methods 8.11 Sewage Treatment	Campus Litter Survey (SO) Plastic Footprint Calculator (SO) Water Disinfection (SO) Design Your Own Water Filter (SO) Water Quality (SO)	
	Spring Break				
	Quarter 4	30	Unit 8 (15)	8.12 Lethal Dose 50% (LD <sub>50</sub> ) 8.13 Dose Response Curve 8.14 Pollution and Human Health 8.15 Pathogens and Infectious Diseases	Toxicity Lab (CB) One in a Million (SO) LD50 (SO)
		31	Unit 9 (10)	9.1 Stratospheric Ozone Depletion 9.2 Reducing Ozone Depletion 9.3 The Greenhouse Effect 9.4 Increases in the Greenhouse Gases 9.5 Global Climate Change	Ozone Depletion Model (SO) Greenhouse Effect PhET (SO) Greenhouse Effect (SO) Albedo (SO) Thawing Permafrost & CO <sub>2</sub> (SO) The Impact of Melting Ice on Sea Level (SO) FT Climate Game (SO)
		32		9.6 Ocean Warming 9.7 Ocean Acidification 9.8 Invasive Species 9.9 Endangered Species 9.10 Human Impacts on Biodiversity	Ocean Acidification Exp. Design Lab Measuring Biodiversity Lab Virtual Urchin - Our Acidifying Ocean (SO) Ocean Acidification (SO) Invasive Species (SO)
33		AP Exam Review	AP Exam Review		
34			4*		
35			5*		
36			5		
37			5		
38	4	Final Exams	APES Project		

CB = College Board (AP Classroom)

SO = Science Outside Environmental Science Lab Manual