TIME	UNIT/ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS
S e t e	<ul> <li>UNIT 1: Understanding Our Environment: Ethics and Philosophy</li> <li>What are the main problems facing our environment today?</li> <li>What are some of the hot local environmental issues today?</li> <li>What are some of the current national/international environmental issues?</li> <li>How have anthropogenic actions affected our ecosystems in America?</li> </ul>	<ul> <li>Construct good arguments in favor of, or against, a particular position on an environmental issue</li> <li>Use the internet to research environmental issues</li> </ul>	<ul> <li>Chapter quiz</li> <li>Labs</li> </ul>
m b e r	<ul> <li>UNIT 2: Matter, Energy, and Life</li> <li>What physical laws govern ecosystem dynamics?</li> <li>How do you make a food chain and food web for organisms in the regional ecosystems in our area?</li> <li>What are the steps of the carbon, nitrogen, and phosphorus cycles?</li> </ul>	Construct food chains and food webs	<ul> <li>Chapter quiz</li> <li>Labs</li> </ul>
September-October	<ul> <li>UNIT 3: Biological Communities and Species</li> <li>Interaction</li> <li>What causes changes in ecosystems?</li> <li>What are the various stages of ecological succession in our area?</li> <li>What are the main types of species interactions?</li> <li>What is the relationship between physiological adaptations and evolutionary success?</li> <li>What limits species abundance?</li> </ul>	<ul> <li>Construct and analyze graphs</li> <li>Construct a formal lab report</li> <li>Utilize the transect sampling method</li> <li>Identify the ecological succession occurring in New Paltz High School fields and woods</li> <li>Set up an experimental ecosystem and understand what abiotic or biotic conditions affect organisms</li> <li>Calculate the statistical analysis of a phenomenon using the Chi Square test</li> </ul>	<ul> <li>Unit test</li> <li>Labs</li> </ul>

TIME	UNIT/ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS
0	<ul> <li>UNIT 4: Biomes, Biodiversity, Restoration, and Management</li> <li>What are the characteristics of the major biomes of the Earth?</li> <li>What are the ways to protect, repair, and manage ecological hot spots?</li> </ul>	<ul> <li>Use the Grinnell method of field journaling</li> <li>Use the Quadrant Sampling method</li> <li>Write a scientific paper</li> <li>Identify local flora</li> <li>Design, conduct, and report the results of a scientific research experiment</li> </ul>	<ul><li>Chapter quiz</li><li>Labs</li></ul>
C t o b e r	<ul> <li>UNIT 5: Biodiversity, Land Use, and Nature Preservation</li> <li>How do the mass extinctions in the past differ from the rate of biodiversity loss experienced today?</li> <li>What are the major challenges to preserving biodiversity on the planet?</li> <li>How has land use changed throughout human history?</li> <li>What are some threats to our national parks?</li> <li>What are some of the negative results of deforestation?</li> <li>Why are wetlands so valuable as a resource?</li> </ul>	Compare the biodiversity between two areas using the Shannon- Weaver index	<ul> <li>Chapter quiz</li> <li>Labs</li> </ul>

Science Advanced Placement Environmental Science

TIME	UNIT/ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS
	<ul> <li>UNIT 6: Population Dynamics</li> <li>How do you estimate the population of groups of organisms in a large area?</li> <li>What factors might regulate the population growth of an organism?</li> </ul>	<ul> <li>Estimate the population of an organism in an area</li> </ul>	<ul><li>Unit test</li><li>Labs</li></ul>
N o v e M b e r	<ul> <li>UNIT 7: Human Populations</li> <li>What are some possible solutions to the soaring world population growth?</li> <li>How does the growth rate of humans affect the use of world resources and health of the environment?</li> <li>How do developed and underdeveloped countries differ in age structure, birth rates, infant morality, death rates, male to female ratios, and population growth?</li> <li>How do you calculate the doubling time of organisms and the growth rate of a population?</li> </ul>	<ul> <li>Calculate the doubling time of a population using the rule of 70</li> <li>Read age structure histograms</li> <li>Interpret graphs of population data such as infant morality and fertility rate</li> <li>Calculate the percent growth rate of a population over a given time period</li> </ul>	<ul> <li>Chapter quiz</li> <li>Labs</li> </ul>
No>0E10D0C0E10-	<ul> <li>UNIT 8: Environmental Health and Toxicology</li> <li>How do you measure the toxicity of a substance?</li> <li>How do the results of toxicity tests relate to environmental degradation and human health?</li> <li>What are the effects of radiation on the growth of plants?</li> <li>How are irradiated organisms affected by the dose and time of exposure?</li> </ul>	<ul> <li>Conduct a disease risk analysis by measuring toxic materials' effect on organisms</li> <li>Calculate the LD50 for various toxic materials</li> <li>Graph experimental and control data as a function of time and radiation data</li> </ul>	<ul> <li>Unit test</li> <li>Labs</li> </ul>

TIME	UNIT/ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS
D e c e m b e r	<ul> <li>UNIT 9: Environmental Geology</li> <li>How did plate tectonics affect the diversity of organisms in terms of habitat change and evolution?</li> <li>How do you read a seismogram?</li> <li>How do volcanic eruptions affect weather patterns?</li> <li>How do volcanoes and earthquakes relate to plate tectonics?</li> </ul>	Read a seismogram	<ul> <li>Chapter quiz</li> <li>Labs</li> </ul>
DeceMber-January	<ul> <li>UNIT 10: Food and Agriculture</li> <li>What are the ways to retard soil erosion in agriculture?</li> <li>What are the methods of mechanical and chemical weathering?</li> <li>How is soil formed?</li> <li>What are soil horizons in a soil profile?</li> <li>What kinds of soil hold water? The most water?</li> <li>What are the chemical components of the soil?</li> <li>What components of the soil are important for growing healthy plants?</li> </ul>	<ul> <li>Determine the slope of a field study area</li> <li>Identify examples of weathering in your ecosystem</li> <li>Test soil for nitrogen, phosphorus, potassium, and pH</li> <li>Describe soil characteristics in terms of color, texture, and water holding capacity</li> </ul>	<ul> <li>Chapter quiz</li> <li>Labs</li> </ul>
Januar y	<ul> <li>UNIT 11: Pest Control</li> <li>How do you measure the success of a pesticide?</li> <li>What are the negative effects of pesticide use?</li> <li>What are some alternatives to pesticides?</li> <li>How can you reduce your exposure to pesticides at home?</li> </ul>	<ul> <li>Calculate the effectiveness of pesticides</li> </ul>	<ul><li>Unit test</li><li>Labs</li></ul>

TIME	UNIT/ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS
Januar y	<ul> <li>UNIT 12: Air, Weather, and Climate</li> <li>How does the differential heating of the planet create global wind patterns?</li> <li>What are the major factors influencing the different climates of the world?</li> <li>What effect do El Nino and La Nina have on global weather patterns?</li> <li>How does the greenhouse effect work, what are typical greenhouse gases, and how can we reduce the emission of these gases?</li> <li>What are the global repercussions of the greenhouse effect?</li> <li>How has the weather changed since your parents were young?</li> <li>What will the impact of global warming on our Mid-Western farmland and North-Eastern hardwoods?</li> </ul>	<ul> <li>Measure atmospheric pressure, temperature, relative humidity, and wind direction</li> <li>Illustrate and explain the greenhouse effect</li> <li>Analyze the impact of global warming</li> </ul>	<ul> <li>Chapter quiz</li> <li>Labs</li> </ul>
January-February	<ul> <li>UNIT 13: Air Pollution</li> <li>How does air pollution affect organisms, including humans?</li> <li>How does the air in New Paltz compare to the EPA quality standards for air pollutants?</li> <li>What are the effects of acid rain on the environment?</li> <li>How do we/can we reduce the emission of pollutants that cause acid rain?</li> <li>How do weather patterns affect the deposition of acid precipitation?</li> <li>How do weather and topography relate to air pollution?</li> <li>What is causing the thinning of the ozone?</li> <li>Why is the protection of the ozone important to us?</li> </ul>	<ul> <li>Collect and measure particulate matter</li> <li>Measure the pH of water</li> </ul>	<ul> <li>Chapter quiz</li> <li>Labs</li> </ul>

TIME	UNIT/ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS
F e b r u a r y	<ul> <li>UNIT 14: Water Use and Management</li> <li>What indoor water conservation tips would you give to your family to cut down on your home water use?</li> </ul>	<ul> <li>Calculate private water use</li> </ul>	<ul> <li>Chapter quiz</li> <li>Labs</li> </ul>
February-March	<ul> <li>UNIT 15: Water Pollution</li> <li>What are the ways that water pollution affects organisms?</li> <li>What is the relationship between BOD and DO?</li> <li>How do the EPA water quality standards compare with the water quality of New Paltz streams?</li> <li>How can we reduce water pollution?</li> <li>How does a sewage treatment plan work?</li> <li>What is the comparison of nitrogen, phosphorus, dissolved suspended solids, BOD and toxic substances before and after sewage treatment?</li> </ul>	<ul> <li>Identify and quantify aquatic insects to determine the health of a stream</li> <li>Measure the DO, BOD, pH, nitrates, phosphates, temperature, total solids, and fecal coliform to determine the health of a stream</li> <li>Identify each step of the sewage treatment plant from input to output</li> </ul>	<ul> <li>Unit test</li> <li>Labs</li> </ul>

TIME	UNIT/ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS
M a r c	<ul> <li>UNIT 16: Solid, Toxic, and Hazardous Waste</li> <li>What kinds and amounts of wastes are generated in a typical house in New Paltz?</li> <li>How does the amount of solid waste your family generates compare to the United States municipal solid waste data?</li> <li>How does a solid waste landfill work?</li> <li>How do you evaluate the effectiveness of waste disposal methods at a landfill?</li> <li>How can we reduce the amount of material that ends up in solid waste landfills?</li> </ul>	<ul> <li>Calculate the quantities of solid waste generated by town, county, and state</li> </ul>	<ul> <li>Chapter quiz</li> <li>Labs</li> </ul>
h	<ul> <li>UNIT 17: Environmental Economics, Policy, and Law</li> <li>What are the local, state, and national laws that apply to the air, water, and toxic waste regulations?</li> <li>How are the cost-benefit ratios determined and how are they used in natural resource management?</li> </ul>	<ul> <li>Calculate the cost- benefit analysis of various projects or actions</li> <li>Utilize the cost-benefit ratio to determine if a project is economically justified</li> </ul>	<ul><li>Unit test</li><li>Labs</li></ul>
March-April	<ul> <li>UNIT 18: Conventional Energy</li> <li>What are renewable and non-renewable resources?</li> <li>How do you determine the rate of energy use for a private home?</li> <li>How can the use of conventional energy resources be reduced?</li> </ul>	<ul> <li>Analyze energy consumption data for natural gas, electricity, and gasoline</li> <li>Calculate monthly and annual costs for energy use</li> </ul>	<ul> <li>Chapter quiz</li> <li>Labs</li> </ul>

TIME	UNIT/ESSENTIAL QUESTIONS	SKILLS	ASSESSMENTS
A P r i	<ul> <li>UNIT 19: Sustainable Energy</li> <li>How do the different alternative energy uses compare in terms of consumption rate and efficiency?</li> <li>How do we conserve and preserve energy resources in terms of reducing use, using efficient energy devices, and alternative renewable resources?</li> </ul>	Build a solar oven	<ul><li>Unit test</li><li>Labs</li></ul>
A P r I I May	<ul> <li>UNIT 20: Urbanization, Sustainable Cities, and Personal Action</li> <li>What are some alternative uses of land that create an economical, ecological, uncontaminated, and sustainable environment?</li> <li>What are the goals of sustainable development?</li> <li>What changes in urbanization are predicted in the next 50 years?</li> <li>How could American cities be redesigned to be more ecologically sound and culturally amenable?</li> </ul>	<ul> <li>Design a sustainable urban area</li> </ul>	<ul> <li>Chapter quiz</li> <li>Lab</li> <li>AP examination</li> </ul>