

Wallenpaupack Area School District Planned Course Curriculum Guide

Department: Science

Name of Course: Issues in Environmental Science I

Course Description:

This course is designed for students attracted to careers in conservation and to develop a connection to the environment and an accompanying desire to protect and preserve it. The focus is on understanding how ecosystems function and the natural history of organisms. This course will explore protection by introducing students to complex, ongoing local resource management issues that involve many diverse stakeholders. Students will explore the background of the issues, the natural resources involved, the consequences, the possible solutions, and the stakeholders' special interests using computer technology, field work, and interviews.

Revision Date: August 2026

Jamie Bartholomew

Wallenpaupack Area School District Curriculum	
COURSE: Issues in Environmental Science I	GRADE/S: 10th, 11th, 12th
UNIT 1: Native plants vs. Nonnative plants when designing a landscape	TIMEFRAME: 14-16 classes

PA STEELS:

3.5.9-12.I (ETS) Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

3.5.9-12.K (ETS) Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

3.5.9-12.T (ETS) Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

3.5.9-12.Y (ETS) Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

3.4.9-12.D Apply research and analytical skills to systematically investigate environmental issues ranging from local issues to those that are regional or global in scope.

3.4.9-12.E Plan and conduct an investigation utilizing environmental data about a local environmental issue.

3.4.9-12.H Design and evaluate solutions in which individuals and societies can promote stewardship in environmental quality and community well-being

UNIT OBJECTIVES (SWBATS):

Students are expected to

- Identify invasive species.
- Communicate the effect invasive species have on an ecosystem.
- Determine solutions to the invasive species problem.
- Communicate the importance of invasive species removal and planting of native plants.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Laboratory Activity including but not limited to physical removal and experimental plots
- Small and Large Group Discussions for planning and implementation of experimental plots.
- Group Work
- Independent Research
- Journaling/Note Keeping

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- Formative Assessments
- Summative Assessments

DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)

Struggling Student – Remediation

Teacher /student individualized instruction to include...

- typed notes
- guided questions

Advanced Student – Extension

Teacher /student individualized instruction to include...

*Student assignments are more in-depth, critical thinking incorporated into increased independent work, and more challenging assessments.

RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):

Newcombs Wildflower Guide

Common Trees of Pennsylvania

<https://www.pa.gov/agencies/fishandboat>

<https://www.pa.gov/agencies/pgc>

Threats to the forest Insects, plants and diseases

VOCABULARY:

Genus species, native, nonnative, invasive, annual, perineal, scientific name

Wallenpaupack Area School District Curriculum

COURSE: Issues in Environmental Science I

GRADE/S: 10th, 11th, 12th

UNIT 2: Erosion or sediment control

TIMEFRAME: 10-12classes

PA STEELS:

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3.5.9-12.K (ETS) Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

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3.4.9-12.E Plan and conduct an investigation utilizing environmental data about a local environmental issue.

3.4.9-12.H Design and evaluate solutions in which individuals and societies can promote stewardship in environmental quality and community well-being

UNIT OBJECTIVES (SWBATS):

Students are expected to

- Explain the effects of erosion on wildlife.
- Propose a solution to erosion on the lake trail.
- Explain solutions in their own communities.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Laboratory Activity including setting up experimental demonstrations of erosion.
- Small and Large Group Discussions
- Group Work
- Independent Work
- Journaling/Note Keeping

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

- Formative Assessments
- Summative Assessments

DIFFERENTIATED INSTRUCTION (Remediation/Extension) (Process, Product or Content)

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RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):

<https://www.pa.gov/agencies/dep/programs-and-services/water/bwrnsm/nonpoint-source/agriculture-compliance/agriculture-erosion-and-sediment-control>

<https://www.epa.gov/sites/default/files/2015-10/documents/chap4c.pdf>

<https://extension.psu.edu/agricultural-erosion-and-sediment-control-planning-resources>

Video: Kiss the Soil

VOCABULARY:

Erosion, riparian buffer, soil types, slope,

Wallenpaupack Area School District Curriculum

COURSE: Issues in Environmental Science I

GRADE/S: 10th, 11th, 12th

UNIT 3: Weather patterns and Global Climate Change

TIMEFRAME: 7-10 classes

PA STEELS:

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UNIT OBJECTIVES (SWBATS):

Students are expected to

- Explain what it is affecting global climate change
- Research natural disasters severity and cost over a 20-year period of time.
- Create a public service announcement related to global warming with suggested solutions.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Small and Large Group Discussions
- Group Work
- Independent Work
- Journaling/Note Keeping

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RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):

<https://www.nature.org/en-us/get-involved/how-to-help/carbon-footprint-calculator/>

How do ocean currents work? - Jennifer Verduin

<https://www.youtube.com/watch?v=p4pWafuvdrY>

Students will find their own resources through research and class sharing.

VOCABULARY:

Natural disaster, climate, weather, weather fronts, tropical depressions, ocean warming, greenhouse gases, ocean currents

Wallenpaupack Area School District Curriculum**COURSE:** Issues in Environmental Science I**GRADE/S:** 10th, 11th, 12th**UNIT 4:** Waste**TIMEFRAME:** 8-11 classes**PA STEELS:**

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3.4.9-12.E Plan and conduct an investigation utilizing environmental data about a local environmental issue.

3.4.9-12.H Design and evaluate solutions in which individuals and societies can promote stewardship in environmental quality and community well-being

UNIT OBJECTIVES (SWBATS):

Students are expected to

- Analyze their own use of resources: electricity, water, food, etc.
- Analyze the average human's consumption.
- Make a plan to reduce your impact.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

- Laboratory Activity experiment of decomposition time for regular household items.
- Small and Large Group Discussions
- Group Work
- Independent Work
- Journaling/Note Keeping

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RESOURCES (Websites, Blogs, Videos, Whiteboard Resources, etc.):

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What Happens To NYC's 3.2 Million Tons Of Trash | Big Business

<https://www.youtube.com/watch?v=S758wEniU0c>

video Wall-E

VOCABULARY:

Recycling, reuse, decomposition, repurposing

