Course Overview

Name of Course: Environmental Science **Name of Department:** Science

Course Summary:

Course Description:

Environmental science is the study of the interactions between the physical, chemical, and biological components of nature. It is a multidisciplinary science that involves a number of disciplines like geology, hydrology, chemistry, physics, anthropology, sociology, botany, zoology, and ecology.

Course Expectation:

This course emphasizes the human impact on earth's systems and resources by exploring case studies providing opportunities to analyze political and private decisions about the environment to understand that the use of resources requires accurate application of scientific processes, including proper data collection and responsible conclusions. Students will use and develop reading, writing, graphing, computer, and communication skills to complete individual and collaborative challenges

Course Essential Questions (Big Ideas):

- What roles do humans and other organisms play in shaping their environment?
- How are economics, government policy, and the natural environment connected and affect future environmental policy?
- How can people make a positive impact on the environment in their own communities?
- How is my community dependent upon other communities, human and non-human?
- What are the ecological and social consequences of my choices and actions?
- How does one live responsibly in the local, national and global community?
- How can we balance ecological integrity and economic development?
- In what ways does the environment affect the health of my family and me, and how do our actions affect the environment?
- In what ways can my family and community minimize our "ecological footprint" on the planet?

Alignment with Next Generation Science Standards: (NGSS)

HS-ESS1-5. Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.

HS-ESS1-6. Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.

HS-ESS2-1. Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.

HS-ESS2-2. Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.

HS-ESS2-3. Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.

HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.

HS-ESS3-2. Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.

HS-ESS3-3. Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.

HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.

HS-ESS3-5. Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems. [

HS-ESS3-6. Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.

HS-ESS2-4. Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.

HS-ESS2-5. Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.

HS-ESS2-6. Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.

HS-ESS2-7. Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.

HS-LS2-1. Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.

HS-LS2-2. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.

HS-LS2-4. Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.

HS-LS2-5. Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

HS-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

HS-LS2-8. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.

HS-LS4-4. Construct an explanation based on evidence for how natural selection leads to adaptation of populations.

HS-LS4-5. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.

HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.

New Jersey Student Learning Standards Connections in ELA/Literacy:

RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

WHST.9-12.1 Write arguments focused on discipline-specific content. (HS-ESS1-6)

WHST.9-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

SL.11-12.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

New Jersey Student Learning Standards Connections in Mathematics:

MP.2 Reason abstractly and quantitatively.

MP.4 Model with mathematics.

HSN-Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

HSN-Q.A.2 Define appropriate quantities for the purpose of descriptive modeling.

HSN-Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

HSA-SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

HSA-CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

HSF-IF.B.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.

HSS-ID.B.6 Represent data on two quantitative variables on a scatter plot, and describe how those variables are related.

NJSLS 21st Century Skills Content Standards(s) addressed:

CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills.
CRP3. Attend to personal health and financial well-being.
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.

CRP10. Plan education and career paths aligned to personal goals.
CRP11 . Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

New Jersey Student Learning Standards in Technology

8.1.12.A.3 Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.

8.1.12.A.4 Construct a spreadsheet workbook with multiple worksheets, rename tabs to reflect the data on the worksheet, and use mathematical or logical functions, charts and data from all worksheets to convey the results

8.1.12.A.5 Create a report from a relational database consisting of at least two tables and describe the process, and explain the report results

8.2.12.B.4 Investigate a technology used in a given period of history, e.g., stone age, industrial revolution or information age, and identify their impact and how they may have changed to meet human needs and wants.

8.2.12.C.2 Analyze a product and how it has changed or might change over time to meet human needs and wants.

8.2.12.C.4 Explain and identify interdependent systems and their functions.

8.1.12.D.1 Demonstrate appropriate application of copyright, fair use and/or Creative Commons to an original work.

8.1.12.E.1 Produce a position statement about a real world problem by developing a systematic plan of investigation with peers and experts synthesizing information from multiple sources.

8.1.12.E.2 Research and evaluate the impact on society of the unethical use of digital tools and present your research to peers.

8.1.12.F.1 Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.

8.2.12.D.6 Synthesize data, analyze trends and draw conclusions regarding the effect of a technology on the individual, society, or the environment and publish conclusions.

Primary interdisciplinary connections: English, Math, History

Course Requirements and Major Assignments:
A student-centered approach should be taken in this course. Information should be conveyed and

examined through the use of primary and secondary source readings, various activities, videos, formal and informal writing assignments, and other short- and long-term activities and projects. Emphasis should be placed upon differentiated instruction techniques in order to appeal to the various ability levels and learning styles of the students.

Unit Planning for Lesson- (Open to individual teacher)

Course Content Outline/Pacing Guide	
Unit/Content Topic	***Timeline***
Introduction to Environmental Science	4 weeks
The Dynamic Earth	6 weeks
Water, Air, & Land	8 weeks
Mineral & Energy Use	6 weeks
Population & Community Ecology	8 weeks
Biodiversity & Extinction	6 weeks

Course Unit/Pacing Guide

Unit #	Unit Title/Major Concepts	Duration:Weeks & School Calendar
1	Introduction to Environmental Science	4 weeks
2	The Dynamic Earth	6 weeks
3	Water, Air & Land Resources	8 weeks
4	Mineral & Energy Use	6 weeks
5	Population & Community Ecology	8 weeks
6	Biodiversity & Extinction	6 weeks

Course Unit 1
Unit Title: Introduction to Environmental Science
Date/Duration: 4 weeks

New Jersey Student Learning Standard(s) (NJSLS) addressed:

HS-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.

HS-LS4-4 Construct an explanation based on evidence for how natural selection leads to adaptation of populations.

HS-LS4-5 Evaluate the evidence supporting claims that changes in environmental conditions may result in (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.

New Jersey Student Learning Standards Connections in ELA/Literacy:

RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

WHST.9-12.1 Write arguments focused on discipline-specific content. (HS-ESS1-6)

WHST.9-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

SL.11-12.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

New Jersey Student Learning Standards Connections in Mathematics:

MP.2 Reason abstractly and quantitatively.

MP.4 Model with mathematics.

HSN-Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

HSN-Q.A.2 Define appropriate quantities for the purpose of descriptive modeling.

HSN-Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

HSA-SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

HSA-CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

HSF-IF.B.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.

HSS-ID.B.6 Represent data on two quantitative variables on a scatter plot, and describe how those variables are related.

NJSLS 21st Century Skills Content Standards(s) addressed:

CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills.
CRP3. Attend to personal health and financial well-being.
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP10. Plan education and career paths aligned to personal goals.
CRP11 . Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

New Jersey Student Learning Standards in Technology

8.1.12.A.3 Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.

8.1.12.A.4 Construct a spreadsheet workbook with multiple worksheets, rename tabs to reflect the data on the worksheet, and use mathematical or logical functions, charts and data from all

worksheets to convey the results

8.1.12.A.5 Create a report from a relational database consisting of at least two tables and describe the process, and explain the report results

8.2.12.B.4 Investigate a technology used in a given period of history, e.g., stone age, industrial
revolution or information age, and identify their impact and how they may have changed to meet human needs and wants.

8.2.12.C.2 Analyze a product and how it has changed or might change over time to meet human needs and wants.

8.2.12.C.4 Explain and identify interdependent systems and their functions.

8.1.12.D.1 Demonstrate appropriate application of copyright, fair use and/or Creative Commons to an original work.

8.1.12.E.1 Produce a position statement about a real world problem by developing a systematic
plan of investigation with peers and experts synthesizing information from multiple sources.

8.1.12.E.2 Research and evaluate the impact on society of the unethical use of digital tools and
present your research to peers.

8.1.12.F.1 Evaluate the strengths and limitations of emerging technologies and their impact on
educational, career, personal and or social needs.

8.2.12.D.6 Synthesize data, analyze trends and draw conclusions regarding the effect of a technology on the individual, society, or the environment and publish conclusions.

Primary interdisciplinary connections: English, Math, History

Stage 1: Desired Results

Transfer

Students will be able to independently use their learning to:

- Compare developed and developing countries
- Evaluate major problems that affect the environment

Meaning

Understandings:	**Essential Questions:**
● Humanity's relationship with and dependence upon the environment has changed throughout history due to technological advancements. ● Human beings live within the world's ecosystems, and modify these ecosystems as a result of population growth, technology, and consumption. ● Human populations use resources in the environment in order to maintain and improve their existence. ● Decisions made by local, national, and international governing bodies can impact local economies and environmental health. ● Citizens can participate in local government at public meetings.	● What roles do humans and other organisms play in shaping their environment? ● How are economics, government policy, and the natural environment connected and affect future environmental policy? ● How can people make a positive impact on the environment in their own communities?
Acquisition	
Students will know…….	**Students will be able to….**
● Human beings live within the world's ecosystems, and modify these ecosystems as a result of population growth, technology, and consumption. ● Human populations use resources in the environment in order to maintain and improve their existence. ● The fields of economics and environmental science are related. ● Environmental Impact Statements can be used to achieve meaningful ecological change. ● Environmental changes help spread infectious diseases.	● Describe three values that people consider when making decisions about the environment. ● Summarize Hardin's "Tragedy of the Commons" ● Apply the four steps in a simple environmental decision-making model. ● Identify the relationship between waste, pollution, and human health. ● Explain how pollution can come from both natural and human activities. ● Describe some of the challenges to achieving sustainability.
Stage 2-Assessment Evidence	
Students will show their learning by...	

Performance Tasks:	**Other Evidence:**
●	● Pre-Assessment ● Quarterly Benchmark Assessment ● SGO Assessment ● Do Nows/Exit Slips ● Unit Test

Stage 3- Learning Plan

Summary of Key Learning Events and Instruction

A student-centered approach should be taken in this course. Information should be conveyed and examined through the use of primary and secondary source readings, various activities, videos, formal and informal writing assignments, and other short- and long-term activities and projects. Emphasis should be placed upon differentiated instruction techniques in order to appeal to the various ability levels and learning styles of the students.

Unit Planning for Lesson- (Open to individual teacher)
(Marzano Element, Technology Used, Differentiation Strategies, & Cross Curricular Activities)

Recommended Accommodations and Modifications

ELL:
- Work toward longer passages as skills in English increase
- Use visuals
- Introduce key vocabulary before lesson
- Provide peer tutoring
- Use a strong student as a "buddy" (does not necessarily have to speak the primary language)

Special Education:
- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Use large print books, Braille, or books on CD (digital text)
- Follow all IEP modifications/504 plan

Gifted and Talented:
- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum
- Organize and offer flexible small group learning activities
- Provide whole group enrichment explorations

- Teach cognitive and methodological skills
- Use center, stations, or contracts

Title 1 (At- Risk Students):

- Homework
- Leveled Reading
- Supplemental Assignments
- Organize integrated problem-solving simulations
- Propose interest-based extension
- Students at Risk of School Failure
- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Communication logs

Specific Resources for Unit

- Lab safety guides
- Materials for Labs
- Data sheets for Lab
- Lab notes and answers to analysis and conclusion questions
- Rubrics

General Resources for Course

- Teacher computer/projection set-up
- Student computer and Internet access
- Appropriate lab equipment
- YouTube
- DVD/VHS/Disc Demonstration
- G suite
- Teacher prepared materials
- Lab Manuals
- Environmental Science Textbook: Holt *Environmental Science*

Course Unit 2

Unit Title: The Dynamic Earth

Date/Duration: 6 weeks

New Jersey Student Learning Standard(s) (NJSLS) addressed:

New Jersey Student Learning Standards Connections in ELA/Literacy:

RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

WHST.9-12.1 Write arguments focused on discipline-specific content. (HS-ESS1-6)

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New Jersey Student Learning Standards Connections in Mathematics:

MP.2 Reason abstractly and quantitatively.

MP.4 Model with mathematics.

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HSA-SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

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quantities; graph equations on coordinate axes with labels and scales.

HSF-IF.B.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.

HSS-ID.B.6 Represent data on two quantitative variables on a scatter plot, and describe how those variables are related.

NJSLS 21st Century Skills Content Standards(s) addressed:

CRP1. Act as a responsible and contributing citizen and employee.
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CRP6. Demonstrate creativity and innovation.
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CRP10. Plan education and career paths aligned to personal goals.
CRP11 . Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

New Jersey Student Learning Standards in Technology

8.1.12.A.3 Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.

8.1.12.A.4 Construct a spreadsheet workbook with multiple worksheets, rename tabs to reflect the data on the worksheet, and use mathematical or logical functions, charts and data from all worksheets to convey the results

8.1.12.A.5 Create a report from a relational database consisting of at least two tables and describe the process, and explain the report results

8.2.12.B.4 Investigate a technology used in a given period of history, e.g., stone age, industrial
revolution or information age, and identify their impact and how they may have changed to meet human needs and wants.

8.2.12.C.2 Analyze a product and how it has changed or might change over time to meet human
needs and wants.

8.2.12.C.4 Explain and identify interdependent systems and their functions.

8.1.12.D.1 Demonstrate appropriate application of copyright, fair use and/or Creative Commons to an original work.

8.1.12.E.1 Produce a position statement about a real world problem by developing a systematic
plan of investigation with peers and experts synthesizing information from multiple sources.

8.1.12.E.2 Research and evaluate the impact on society of the unethical use of digital tools and
present your research to peers.

8.1.12.F.1 Evaluate the strengths and limitations of emerging technologies and their impact on
educational, career, personal and or social needs.

8.2.12.D.6 Synthesize data, analyze trends and draw conclusions regarding the effect of a technology on the individual, society, or the environment and publish conclusions.

Primary interdisciplinary connections: English, Math, History

Stage 1: Desired Results

Transfer

Students will be able to independently use their learning to:

-

Meaning

Understandings:	**Essential Questions:**
●	●

Acquisition

Students will know…….	**Students will be able to….**
●	●

Stage 2-Assessment Evidence

Students will show their learning by...

Performance Tasks:	**Other Evidence:**
●	●

Stage 3- Learning Plan

Summary of Key Learning Events and Instruction

Recommended Accommodations and Modifications

ELL:

- Work toward longer passages as skills in English increase
- Use visuals
- Introduce key vocabulary before lesson
- Provide peer tutoring
- Use a strong student as a "buddy" (does not necessarily have to speak the primary language)

Special Education:

- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Use large print books, Braille, or books on CD (digital text)
- Follow all IEP modifications/504 plan

Gifted and Talented:

- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum
- Organize and offer flexible small group learning activities
- Provide whole group enrichment explorations
- Teach cognitive and methodological skills
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Title 1 (At- Risk Students):

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Students at Risk of School Failure

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Specific Resources for Unit

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General Resources for Course

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- YouTube
- DVD/VHS/Disc Demonstration
- G suite
- Teacher prepared materials
- Lab Manuals
- Environmental Science Textbook: Holt *Environmental Science*

Course Unit 3
Unit Title: Water, Air & Land Resources
Date/Duration: 8 weeks
New Jersey Student Learning Standard(s) (NJSLS) addressed: **New Jersey Student Learning Standards Connections in ELA/Literacy:** **RST.11-12.1** Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. **RST.11-12.7** Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. **RST.11-12.8** Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. **WHST.9-12.1** Write arguments focused on discipline-specific content. (HS-ESS1-6) **WHST.9-12.2** Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. **SL.11-12.4** Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. **New Jersey Student Learning Standards Connections in Mathematics:** **MP.2** Reason abstractly and quantitatively. **MP.4** Model with mathematics. **HSN-Q.A.1** Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. **HSN-Q.A.2** Define appropriate quantities for the purpose of descriptive modeling. **HSN-Q.A.3** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

HSA-SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

HSA-CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

HSF-IF.B.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.

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Primary interdisciplinary connections: English, Math, History

Stage 1: Desired Results

Transfer

Students will be able to independently use their learning to:

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Meaning

Understandings:	**Essential Questions:**
●	●

Acquisition	
Students will know……. ●	**Students will be able to….** ●
Stage 2-Assessment Evidence	
Students will show their learning by...	
Performance Tasks: ●	**Other Evidence:** ●
Stage 3- Learning Plan	
Summary of Key Learning Events and Instruction	
Recommended Accommodations and Modifications	
ELL: ● Work toward longer passages as skills in English increase ● Use visuals ● Introduce key vocabulary before lesson ● Provide peer tutoring ● Use a strong student as a "buddy" (does not necessarily have to speak the primary language) Special Education: ● Allow extra time to complete assignments or tests	

- Work in a small group
- Allow answers to be given orally or dictated
- Use large print books, Braille, or books on CD (digital text)
- Follow all IEP modifications/504 plan

Gifted and Talented:

- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum
- Organize and offer flexible small group learning activities
- Provide whole group enrichment explorations
- Teach cognitive and methodological skills
- Use center, stations, or contracts

Title 1 (At- Risk Students):

- Homework
- Leveled Reading
- Supplemental Assignments
- Organize integrated problem-solving simulations
- Propose interest-based extension

Students at Risk of School Failure

- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Communication logs

Specific Resources for Unit

- Lab safety guides
- Materials for Labs
- Data sheets for Lab
- Lab notes and answers to analysis and conclusion questions
- Rubrics

General Resources for Course

- Teacher computer/projection set-up
- Student computer and Internet access
- Appropriate lab equipment
- YouTube
- DVD/VHS/Disc Demonstration
- G suite
- Teacher prepared materials
- Lab Manuals
- Environmental Science Textbook: Holt *Environmental Science*

Course Unit 4
Unit Title: Mineral & Energy Use
Date/Duration: 6 weeks
New Jersey Student Learning Standard(s) (NJSLS) addressed: **New Jersey Student Learning Standards Connections in ELA/Literacy:** **RST.11-12.1** Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. **RST.11-12.7** Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. **RST.11-12.8** Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. **WHST.9-12.1** Write arguments focused on discipline-specific content. (HS-ESS1-6) **WHST.9-12.2** Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. **SL.11-12.4** Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. **New Jersey Student Learning Standards Connections in Mathematics:** **MP.2** Reason abstractly and quantitatively. **MP.4** Model with mathematics. **HSN-Q.A.1** Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. **HSN-Q.A.2** Define appropriate quantities for the purpose of descriptive modeling.

HSN-Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

HSA-SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

HSA-CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

HSF-IF.B.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.

HSS-ID.B.6 Represent data on two quantitative variables on a scatter plot, and describe how those variables are related.

NJSLS 21st Century Skills Content Standards(s) addressed:

CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills.
CRP3. Attend to personal health and financial well-being.
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP10. Plan education and career paths aligned to personal goals.
CRP11 . Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

New Jersey Student Learning Standards in Technology

8.1.12.A.3 Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.

8.1.12.A.4 Construct a spreadsheet workbook with multiple worksheets, rename tabs to reflect the data on the worksheet, and use mathematical or logical functions, charts and data from all worksheets to convey the results

8.1.12.A.5 Create a report from a relational database consisting of at least two tables and describe the process, and explain the report results

8.2.12.B.4 Investigate a technology used in a given period of history, e.g., stone age, industrial
revolution or information age, and identify their impact and how they may have changed to meet human needs and wants.

8.2.12.C.2 Analyze a product and how it has changed or might change over time to meet human
needs and wants.

8.2.12.C.4 Explain and identify interdependent systems and their functions.

8.1.12.D.1 Demonstrate appropriate application of copyright, fair use and/or Creative Commons to an original work.

8.1.12.E.1 Produce a position statement about a real world problem by developing a systematic
plan of investigation with peers and experts synthesizing information from multiple sources.

8.1.12.E.2 Research and evaluate the impact on society of the unethical use of digital tools and
present your research to peers.

8.1.12.F.1 Evaluate the strengths and limitations of emerging technologies and their impact on
educational, career, personal and or social needs.

8.2.12.D.6 Synthesize data, analyze trends and draw conclusions regarding the effect of a technology on the individual, society, or the environment and publish conclusions.

Primary interdisciplinary connections: English, Math, History

Stage 1: Desired Results

Transfer

Students will be able to independently use their learning to:

-

Meaning

Understandings: ●	**Essential Questions:** ●
Acquisition	
Students will know……. ●	**Students will be able to….** ●
Stage 2-Assessment Evidence	
Students will show their learning by...	
Performance Tasks: ●	**Other Evidence:** ●
Stage 3- Learning Plan	
Summary of Key Learning Events and Instruction	
Recommended Accommodations and Modifications	
ELL: ● Work toward longer passages as skills in English increase ● Use visuals ● Introduce key vocabulary before lesson ● Provide peer tutoring ● Use a strong student as a "buddy" (does not necessarily have to speak the primary	

language)

Special Education:

- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Use large print books, Braille, or books on CD (digital text)
- Follow all IEP modifications/504 plan

Gifted and Talented:

- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum
- Organize and offer flexible small group learning activities
- Provide whole group enrichment explorations
- Teach cognitive and methodological skills
- Use center, stations, or contracts

Title 1 (At- Risk Students):

- Homework
- Leveled Reading
- Supplemental Assignments
- Organize integrated problem-solving simulations
- Propose interest-based extension

Students at Risk of School Failure

- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Communication logs

Specific Resources for Unit

- Lab safety guides
- Materials for Labs
- Data sheets for Lab
- Lab notes and answers to analysis and conclusion questions
- Rubrics

General Resources for Course

- Teacher computer/projection set-up
- Student computer and Internet access
- Appropriate lab equipment
- YouTube
- DVD/VHS/Disc Demonstration
- G suite

- Teacher prepared materials
- Lab Manuals
- Environmental Science Textbook: Holt *Environmental Science*

Course Unit 5
Unit Title: Population & Community Ecology
Date/Duration: 8 weeks
New Jersey Student Learning Standard(s) (NJSLS) addressed: **New Jersey Student Learning Standards Connections in ELA/Literacy:** **RST.11-12.1** Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. **RST.11-12.7** Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. **RST.11-12.8** Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. **WHST.9-12.1** Write arguments focused on discipline-specific content. (HS-ESS1-6) **WHST.9-12.2** Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. **SL.11-12.4** Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. **New Jersey Student Learning Standards Connections in Mathematics:** **MP.2** Reason abstractly and quantitatively. **MP.4** Model with mathematics. **HSN-Q.A.1** Use units as a way to understand problems and to guide the solution of multi-step

problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

HSN-Q.A.2 Define appropriate quantities for the purpose of descriptive modeling.

HSN-Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

HSA-SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

HSA-CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

HSF-IF.B.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.

HSS-ID.B.6 Represent data on two quantitative variables on a scatter plot, and describe how those variables are related.

NJSLS 21st Century Skills Content Standards(s) addressed:

CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills.
CRP3. Attend to personal health and financial well-being.
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP10. Plan education and career paths aligned to personal goals.
CRP11 . Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

New Jersey Student Learning Standards in Technology

8.1.12.A.3 Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.

8.1.12.A.4 Construct a spreadsheet workbook with multiple worksheets, rename tabs to reflect the data on the worksheet, and use mathematical or logical functions, charts and data from all worksheets to convey the results

8.1.12.A.5 Create a report from a relational database consisting of at least two tables and describe the process, and explain the report results

8.2.12.B.4 Investigate a technology used in a given period of history, e.g., stone age, industrial
revolution or information age, and identify their impact and how they may have changed to meet human needs and wants.

8.2.12.C.2 Analyze a product and how it has changed or might change over time to meet human
needs and wants.

8.2.12.C.4 Explain and identify interdependent systems and their functions.

8.1.12.D.1 Demonstrate appropriate application of copyright, fair use and/or Creative Commons to an original work.

8.1.12.E.1 Produce a position statement about a real world problem by developing a systematic
plan of investigation with peers and experts synthesizing information from multiple sources.

8.1.12.E.2 Research and evaluate the impact on society of the unethical use of digital tools and
present your research to peers.

8.1.12.F.1 Evaluate the strengths and limitations of emerging technologies and their impact on
educational, career, personal and or social needs.

8.2.12.D.6 Synthesize data, analyze trends and draw conclusions regarding the effect of a technology on the individual, society, or the environment and publish conclusions.

Primary interdisciplinary connections: English, Math, History

Stage 1: Desired Results

Transfer

Students will be able to independently use their learning to:

•	
Meaning	
Understandings: •	**Essential Questions:** •
Acquisition	
Students will know……. •	**Students will be able to….** •
Stage 2-Assessment Evidence	
Students will show their learning by...	
Performance Tasks: •	**Other Evidence:** •
Stage 3- Learning Plan	
Summary of Key Learning Events and Instruction	
Recommended Accommodations and Modifications	
ELL:	

- Work toward longer passages as skills in English increase
- Use visuals
- Introduce key vocabulary before lesson
- Provide peer tutoring
- Use a strong student as a "buddy" (does not necessarily have to speak the primary language)

Special Education:

- Allow extra time to complete assignments or tests
- Work in a small group
- Allow answers to be given orally or dictated
- Use large print books, Braille, or books on CD (digital text)
- Follow all IEP modifications/504 plan

Gifted and Talented:

- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum
- Organize and offer flexible small group learning activities
- Provide whole group enrichment explorations
- Teach cognitive and methodological skills
- Use center, stations, or contracts

Title 1 (At- Risk Students):

- Homework
- Leveled Reading
- Supplemental Assignments
- Organize integrated problem-solving simulations
- Propose interest-based extension

Students at Risk of School Failure

- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Communication logs

Specific Resources for Unit

- Lab safety guides
- Materials for Labs
- Data sheets for Lab
- Lab notes and answers to analysis and conclusion questions
- Rubrics

General Resources for Course

- Teacher computer/projection set-up
- Student computer and Internet access
- Appropriate lab equipment
- YouTube
- DVD/VHS/Disc Demonstration
- G suite
- Teacher prepared materials
- Lab Manuals
- Environmental Science Textbook: Holt *Environmental Science*

Course Unit 6

Unit Title: Biodiversity & Extinction

Date/Duration: 6 weeks

New Jersey Student Learning Standard(s) (NJSLS) addressed:

New Jersey Student Learning Standards Connections in ELA/Literacy:

RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

WHST.9-12.1 Write arguments focused on discipline-specific content. (HS-ESS1-6)

WHST.9-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

SL.11-12.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

New Jersey Student Learning Standards Connections in Mathematics:

MP.2 Reason abstractly and quantitatively.

MP.4 Model with mathematics.

HSN-Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

HSN-Q.A.2 Define appropriate quantities for the purpose of descriptive modeling.

HSN-Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

HSA-SSE.A.1 Interpret expressions that represent a quantity in terms of its context.

HSA-CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

HSF-IF.B.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.

HSS-ID.B.6 Represent data on two quantitative variables on a scatter plot, and describe how those variables are related.

NJSLS 21st Century Skills Content Standards(s) addressed:

CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills.
CRP3. Attend to personal health and financial well-being.
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP10. Plan education and career paths aligned to personal goals.
CRP11 . Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

New Jersey Student Learning Standards in Technology

8.1.12.A.3 Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.

8.1.12.A.4 Construct a spreadsheet workbook with multiple worksheets, rename tabs to reflect the data on the worksheet, and use mathematical or logical functions, charts and data from all worksheets to convey the results

8.1.12.A.5 Create a report from a relational database consisting of at least two tables and describe the process, and explain the report results

8.2.12.B.4 Investigate a technology used in a given period of history, e.g., stone age, industrial
revolution or information age, and identify their impact and how they may have changed to meet human needs and wants.

8.2.12.C.2 Analyze a product and how it has changed or might change over time to meet human
needs and wants.

8.2.12.C.4 Explain and identify interdependent systems and their functions.

8.1.12.D.1 Demonstrate appropriate application of copyright, fair use and/or Creative Commons to an original work.

8.1.12.E.1 Produce a position statement about a real world problem by developing a systematic
plan of investigation with peers and experts synthesizing information from multiple sources.

8.1.12.E.2 Research and evaluate the impact on society of the unethical use of digital tools and
present your research to peers.

8.1.12.F.1 Evaluate the strengths and limitations of emerging technologies and their impact on
educational, career, personal and or social needs.

8.2.12.D.6 Synthesize data, analyze trends and draw conclusions regarding the effect of a technology on the individual, society, or the environment and publish conclusions.

Primary interdisciplinary connections: English, Math, History

Stage 1: Desired Results	
Transfer	
Students will be able to independently use their learning to: ●	
Meaning	
Understandings: ●	**Essential Questions:** ●
Acquisition	
Students will know……. ●	**Students will be able to….** ●
Stage 2-Assessment Evidence	
Students will show their learning by...	
Performance Tasks: ●	**Other Evidence:** ●
Stage 3- Learning Plan	
Summary of Key Learning Events and Instruction	

Recommended Accommodations and Modifications

ELL:

- Work toward longer passages as skills in English increase
- Use visuals
- Introduce key vocabulary before lesson
- Provide peer tutoring
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Special Education:

- Allow extra time to complete assignments or tests
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- Teach cognitive and methodological skills
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Title 1 (At- Risk Students):

- Homework
- Leveled Reading
- Supplemental Assignments
- Organize integrated problem-solving simulations
- Propose interest-based extension

Students at Risk of School Failure

- Strategic grouping
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Specific Resources for Unit

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General Resources for Course

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