



Pine Grove Area

SCHOOL DISTRICT

Science

7th Grade Science

April 15, 2009

I. PHILOSOPHY

The seventh grade general science course is created to provide students with information on various scientific concepts. Students will further their exploration of these topic areas through cooperative learning, self discovery, and real-world applications. Science should be viewed by our students as intertwined concepts that relate to one another in many given ways. In turn this should provide a guide to find solutions, explain and predict events, hypothesize creative and more productive methods for human society while keeping in mind the effects of scientific activities upon our natural world.

II. CORE CONCEPTS

1. Scientific Method - Identify and create questions and hypotheses that can be answered through scientific investigations; design and conduct investigations to demonstrate an understanding of scientific inquiry; analyze and evaluate scientific information.
2. Watersheds and Wetlands - Conduct investigations using models or other means to identify, describe, and analyze environmental laws and the effects of human activities on land, water, fisheries, and wildlife; explain how water enters a watershed.
3. Ecology - Conduct investigations using models or other means to explain how human activities affect local and national environments and ecosystems; describe effect of waste on the environment; describe and analyze how the development of civilization impacts the environment and habitat losses.
4. Cells - Conduct investigations using models or other means to explain the structure and function of plant and animal cells; predict the movement of substances through osmosis or diffusion; analyze illness and disease resulting from cellular changes.
5. Human Body Systems - Conduct investigations using models or other means to analyze and evaluate how systems in the human body relate to each other; to apply knowledge to make better health decisions.
6. Heredity (Genetics) - Conduct investigations using models or other means to analyze and evaluate the significance of reproduction as it relates to inherited characteristics; analyze the role of probability of inherited traits and genetic disorders.
7. Natural Selection - Conduct investigations using models or other means to describe the process of natural selection and resulting new species; explain species changes over time; explain theories of evolution.
8. Taxonomy - Conduct investigations using models or other means to understand and apply applications of classification; explain seven levels of taxonomy.

III. COURSE OF STUDY

A. Course Name: *General Science*

B. Grade Level: 7

C. Length of Course: *one year*

1. Frequency: *daily*

2. Duration: *approximately 44 minutes per class*

D. Academic Level: 7th Grade

E. Credits: *none*

F. Prerequisites: *none*

G. Course Description:

This course is an introduction to basic science concepts that meet PA State Assessment Standards. Students use the scientific method to make observations and participate in investigations that focus on higher level thinking skills. Topics covered in this curriculum include scientific method, watersheds and wetlands, ecology, cells, human body systems, heredity, natural selection, and taxonomy.

CONTENT: Grade 7 General Science**CORE CONCEPT 1: Scientific Method**

MAJOR OBJECTIVE: Identify and create questions and hypotheses that can be answered through scientific investigations; design and conduct investigations to demonstrate an understanding of scientific inquiry; analyze and evaluate scientific information.

CURRICULUM STANDARD: Unifying Themes

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.1.7</p> <p>A. Explain the parts of a simple system and their relationship to each other.</p> <ul style="list-style-type: none"> • Distinguish between system inputs, system processes and system outputs. • Distinguish between open loop and closed loop systems. • Apply systems analysis to solve problems. 	<p>Teacher will guide students to:</p> <p>Compare and contrast system inputs, system processes and system outputs.</p> <p>Compare and contrast open loop and closed loop systems.</p> <p>Evaluate a variety of systems and apply previous knowledge to solve problems.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 1: Scientific Method

MAJOR OBJECTIVE: Identify and create questions and hypotheses that can be answered through scientific investigations; design and conduct investigations to demonstrate an understanding of scientific inquiry; analyze and evaluate scientific information.

CURRICULUM STANDARD: Inquiry and Design

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.2.7</p> <p>A. Explain and apply scientific and technological knowledge.</p> <ul style="list-style-type: none">• Distinguish between a scientific theory and a belief.• Answer “What if” questions based on observation, inference or prior knowledge or experience.• Explain how skepticism about an accepted scientific explanation led to a new understanding.• Explain how new information may change existing theories and practice.	<p>Teacher will guide students to:</p> <p>Explain the difference between a scientific theory and a belief.</p> <p>Create and respond to “What if” questions that are based on observation, inference or prior knowledge or experience.</p> <p>Examine various scientific explanations and reactions to each as well as any new understanding that may have occurred.</p> <p>Describe how new and current information may change how existing theories and practices are viewed.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none">▪ Student notebooks▪ Group projects▪ Partner projects▪ Individual projects▪ Homework▪ Class work▪ Teacher observation▪ Tests/Quizzes▪ Independent activities▪ Cooperative activities▪ Student Journals▪ Teacher demonstration and student observations▪ Student demonstrations▪ Oral presentations▪ Oral questions and answers▪ Worksheets▪ Concept Maps/graphic organizer▪ Diagrams▪ Portfolio▪ Rubrics	<ul style="list-style-type: none">▪ Student textbook▪ Instructors textbook▪ Textbook resources▪ Instructor generated resources▪ Internet sites▪ Science videos▪ Laser disc presentations▪ Software programs▪ Newspapers and magazines▪ Cable in the Classroom▪ Lab materials for instructor demonstrations▪ Lab materials for student demonstrations▪ Lab materials for class activities▪ Library▪ Student developed resources▪ Outside presenters▪ Community resources

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CURRICULUM STANDARD: Inquiry and Design

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.2.7</p> <p>B. Apply process knowledge to make and interpret observations.</p> <ul style="list-style-type: none"> • Measure materials using a variety of scales. • Describe relationships by making inferences and predictions. • Communicate, use space / time relationships, define operationally, raise questions, formulate hypotheses, test and experiment. • Design controlled experiments, recognize variables, and manipulate variables. • Interpret data, formulate models, design models, and produce solutions. 	<p>Teacher will guide students to:</p> <p>Measure a variety of items using both the standard and metric system.</p> <p>Examine relationships by using predictions, inferences, and deduction.</p> <p>Explain the steps to the Scientific Method and give examples of each step.</p> <p>Create and explain an experiment that includes dependent and independent variables.</p> <p>Examine data from an experiment to design models and explore solutions to the experiment.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

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MAJOR OBJECTIVE: Identify and create questions and hypotheses that can be answered through scientific investigations; design and conduct investigations to demonstrate an understanding of scientific inquiry; analyze and evaluate scientific information.

CURRICULUM STANDARD: Inquiry and Design

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.2.7</p> <p>C. Identify and use the elements of scientific inquiry to solve problems.</p> <ul style="list-style-type: none"> • Generate questions about objects, organisms and/or events that can be answered through scientific investigations. • Evaluate the appropriateness of questions. • Design an investigation with limited variables to investigate a question. • Conduct a two-part experiment. • Judge the significance of experimental information in answering the question. • Communicate appropriate conclusions from the experiment. 	<p>Teacher will guide students to:</p> <p>Create questions and identify how to answer the questions by using the Scientific Method.</p> <p>Examine whether scientific questions have merit and can be answered by using the Scientific Method.</p> <p>Create an investigation to answer a question and experiment that contains variables.</p> <p>Carryout an experiment that includes a control and variable.</p> <p>Determine if a scientific investigation is necessary when answering certain questions.</p> <p>Create a conclusion, in written form, based on the results of an experiment.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 1: Scientific Method

MAJOR OBJECTIVE: Identify and create questions and hypotheses that can be answered through scientific investigations; design and conduct investigations to demonstrate an understanding of scientific inquiry; analyze and evaluate scientific information.

CURRICULUM STANDARD: Technological Devices

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.7.7</p> <p>A. Describe the safe and appropriate use of tools, materials and techniques to answer questions and solve problems.</p> <ul style="list-style-type: none">• Identify uses of tools, machines, materials, information, people, money, energy and time that meet specific design criteria.• Describe safe procedures for using tools and materials.• Assess materials for appropriateness of use.	<p>Teacher will guide students to:</p> <p>Identify a variety of tools, machines, materials, information, people, money, energy and time that meet specific design criteria.</p> <p>Explain safety procedures when in a scientific lab.</p> <p>Examine scientific materials that are used in a scientific lab.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none">▪ Student notebooks▪ Group projects▪ Partner projects▪ Individual projects▪ Homework▪ Class work▪ Teacher observation▪ Tests/Quizzes▪ Independent activities▪ Cooperative activities▪ Student Journals▪ Teacher demonstration and student observations▪ Student demonstrations▪ Oral presentations▪ Oral questions and answers▪ Worksheets▪ Concept Maps/graphic organizer▪ Diagrams▪ Portfolio▪ Rubrics	<ul style="list-style-type: none">▪ Student textbook▪ Instructors textbook▪ Textbook resources▪ Instructor generated resources▪ Internet sites▪ Science videos▪ Laser disc presentations▪ Software programs▪ Newspapers and magazines▪ Cable in the Classroom▪ Lab materials for instructor demonstrations▪ Lab materials for student demonstrations▪ Lab materials for class activities▪ Library▪ Student developed resources▪ Outside presenters▪ Community resources

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CURRICULUM STANDARD: Technological Devices

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.7.7 B. Use appropriate instruments and apparatus to study materials.</p> <ul style="list-style-type: none"> • Select appropriate instruments to measure the size, weight, shape and temperature of living and non-living objects. • Apply knowledge of different measurement systems to measure and record objects' properties. 	<p>Teacher will guide students to:</p> <p>Identify scientific materials and to measure living and non-living objects.</p> <p>Utilize standard and metrics to measure the properties of an object.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 2: Watersheds and Wetlands

MAJOR OBJECTIVE: Conduct investigations using models or other means to identify, describe, and analyze environmental laws and the effects of human activities on land, water, fisheries, and wildlife; explain how water enters a watershed.

CURRICULUM STANDARD: Watersheds and Wetlands

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.1.7</p> <p>A. Explain the role of the water cycle within a watershed.</p> <ul style="list-style-type: none"> • Explain the water cycle. • Explain the water cycle as it relates to a watershed. 	<p>Teacher will guide students to:</p> <p>Illustrate the parts of the water cycle and describe the role of each part.</p> <p>Describe the role of the water cycle and the importance to watersheds.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

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CURRICULUM STANDARD: Watersheds and Wetlands

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.1.7.B. Understand the role of the watershed.</p> <ul style="list-style-type: none"> • Identify and explain what determines the boundaries of a watershed. • Explain how water enters a watershed. • Explain factors that affect water quality and flow through a watershed. 	<p>Teacher will guide students to:</p> <p>Define a watershed and describe how the boundaries are determined.</p> <p>Illustrate how water enters a watershed.</p> <p>Identify and describe various factors that could affect the quality and flow of water through a watershed.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

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CURRICULUM STANDARD: Watersheds and Wetlands

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.1.7 C. Explain the effects of water on the life of organisms in a watershed.</p> <ul style="list-style-type: none"> • Explain how water is necessary for all life. • Explain how the physical components of aquatic systems influence the organisms that live there in terms of size, shape and physical adaptations. • Describe the life cycle of organisms that depend on water. • Identify organisms that have aquatic stages of life and describe those stages. 	<p>Teacher will guide students to:</p> <p>Illustrate and describe how water is necessary for all life.</p> <p>Identify physical components of an aquatic system and explain how those components could influence various organisms that live there.</p> <p>Identify a number of organisms that depend on water and describe their life cycle.</p> <p>Name a number of aquatic organisms and describe the life stages of each.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 2: Watersheds and Wetlands

MAJOR OBJECTIVE: Conduct investigations using models or other means to identify, describe, and analyze environmental laws and the effects of human activities on land, water, fisheries, and wildlife; explain how water enters a watershed.

CURRICULUM STANDARD: Watersheds and Wetlands

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.1.7 D. Explain and describe characteristics of a wetland.</p> <ul style="list-style-type: none">• Identify specific characteristics of wetland plants and soils.• Recognize the common types of plants and animals.• Describe different types of wetlands.• Describe the different functions of a wetland.	<p>Teacher will guide students to:</p> <p>Discover wetland plants and soils and describe the characteristics of each.</p> <p>Identify a variety of plants and animals found in a watershed.</p> <p>Identify and describe the different types of wetlands.</p> <p>Create a list and explain the different functions of a wetland.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none">▪ Student notebooks▪ Group projects▪ Partner projects▪ Individual projects▪ Homework▪ Class work▪ Teacher observation▪ Tests/Quizzes▪ Independent activities▪ Cooperative activities▪ Student Journals▪ Teacher demonstration and student observations▪ Student demonstrations▪ Oral presentations▪ Oral questions and answers▪ Worksheets▪ Concept Maps/graphic organizer▪ Diagrams▪ Portfolio▪ Rubrics	<ul style="list-style-type: none">▪ Student textbook▪ Instructors textbook▪ Textbook resources▪ Instructor generated resources▪ Internet sites▪ Science videos▪ Laser disc presentations▪ Software programs▪ Newspapers and magazines▪ Cable in the Classroom▪ Lab materials for instructor demonstrations▪ Lab materials for student demonstrations▪ Lab materials for class activities▪ Library▪ Student developed resources▪ Outside presenters▪ Community resources

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CURRICULUM STANDARD: Watersheds and Wetlands

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.1.7 E. Describe the impact of watersheds and wetlands on people.</p> <ul style="list-style-type: none"> • Explain the impact of watersheds and wetlands in flood control, wildlife habitats and pollution abatement. • Explain the influence of flooding on wetlands. 	<p>Teacher will guide students to:</p> <p>Describe the importance of watersheds and wetlands as they relate to flood control, wildlife habitats, and pollution abatement.</p> <p>Investigate the pros and cons regarding what influence wetlands have on flooding.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 3: Ecology

MAJOR OBJECTIVE: Conduct investigations using models or other means to explain how human activities affect local and national environments and ecosystems; describe effect of waste on the environment; describe and analyze how the development of civilization impacts the environment and habitat losses.

CURRICULUM STANDARD: Renewable and Nonrenewable Resources

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.2.7. A. Know that raw materials come from natural resources.</p> <ul style="list-style-type: none">• Identify resources used to provide humans with energy, food, housing and water.• Explain how plants and animals may be classified as natural resources.• Compare means of growing or acquiring food.• Identify fiber and other raw materials used in clothing and shelter production.• Identify types of minerals and fossil fuels used by humans.	<p>Teacher will guide students to:</p> <p>Name various resources that provide humans with energy, food, housing, and water.</p> <p>Describe natural resources and classify how plants and animals fit into that category.</p> <p>Compare the advantages and disadvantages of growing or acquiring food.</p> <p>Discover materials used in clothing and shelter production.</p> <p>List various minerals and fossil fuels that are used by humans.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none">▪ Student notebooks▪ Group projects▪ Partner projects▪ Individual projects▪ Homework▪ Class work▪ Teacher observation▪ Tests/Quizzes▪ Independent activities▪ Cooperative activities▪ Student Journals▪ Teacher demonstration and student observations▪ Student demonstrations▪ Oral presentations▪ Oral questions and answers▪ Worksheets▪ Concept Maps/graphic organizer▪ Diagrams▪ Portfolio▪ Rubrics	<ul style="list-style-type: none">▪ Student textbook▪ Instructors textbook▪ Textbook resources▪ Instructor generated resources▪ Internet sites▪ Science videos▪ Laser disc presentations▪ Software programs▪ Newspapers and magazines▪ Cable in the Classroom▪ Lab materials for instructor demonstrations▪ Lab materials for student demonstrations▪ Lab materials for class activities▪ Library▪ Student developed resources▪ Outside presenters▪ Community resources

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CURRICULUM STANDARD: Renewable and Nonrenewable Resources

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<p>PA Standard 4.2.7.B Examine the renewability of resources.</p> <ul style="list-style-type: none"> • Identify renewable resources and describe their uses. • Identify nonrenewable resources and describe their uses. • Compare finished products to their original raw material. • Identify the waste derived from the use of renewable and nonrenewable resources. • Determine how consumption may impact the availability of resources. • Compare the time spans of renewability for fossil fuels and alternative fuels. 	<p>Teacher will guide students to:</p> <p>Name renewable resources and describe how they are used.</p> <p>Name nonrenewable resources and describe how they are used.</p> <p>Identify original raw materials and compare the finished</p> <p>Summarize types of waste that result with the use of renewable and nonrenewable resources.</p> <p>Identify methods of consumption of specific resources and evaluate the impact on availability of those resources.</p> <p>Illustrate different time spans for the renewability of fossil fuels and alternative fuels.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

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CURRICULUM STANDARD: Renewable and Nonrenewable Resources

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.2.7.C Explain natural resource distribution.</p> <ul style="list-style-type: none"> • Distinguish between readily available and less accessible resources. • Identify the locations of different concentrations of fossil fuels and mineral resources. 	<p>Teacher will guide students to:</p> <p>Compare and contrast readily and less accessible resources.</p> <p>Locate where various fossil fuels and mineral resources can be found.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

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CURRICULUM STANDARD: Renewable and Nonrenewable Resources

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.2.7.D Describe the role of recycling and waste management.</p> <ul style="list-style-type: none"> • Identify materials that can be recycled in the community. • Explain the process of closing the loop in recycling. • Compare the decomposition rates of different organic materials. • Describe methods that could be used to reuse materials for new products. • Evaluate the costs and benefits of disposable products. 	<p>Teacher will guide students to:</p> <p>Detect various materials that can be recycled within a community.</p> <p>Clarify and use examples to discuss closing the loop in recycling.</p> <p>Compare the rate of decomposition of various organic materials.</p> <p>Choose and describe methods for reusing materials and creating new products.</p> <p>Investigate and estimate the benefits and costs of using disposable products.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

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MAJOR OBJECTIVE: Conduct investigations using models or other means to explain how human activities affect local and national environments and ecosystems; describe effect of waste on the environment; describe and analyze how the development of civilization impacts the environment and habitat losses.

CURRICULUM STANDARD: Environmental Health

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.3.7.A Identify environmental health issues.</p> <ul style="list-style-type: none"> • Identify various examples of long-term pollution and explain their effects on environmental health. • Identify diseases that have been associated with poor environmental quality. • Describe different types of pest controls and their effects on the environment. • Identify alternative products that can be used in life to reduce pollution. 	<p>Teacher will guide students to:</p> <p>Identify and describe several examples of how long-term pollution affects environmental health.</p> <p>Describe several examples of diseases that have been linked to poor environmental quality.</p> <p>Describe several types of pest control and explain how they affect the environment.</p> <p>Identify a variety of chemical alternatives that can be used and explain how their use may reduce pollution.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 3: Ecology

MAJOR OBJECTIVE: Conduct investigations using models or other means to explain how human activities affect local and national environments and ecosystems; describe effect of waste on the environment; describe and analyze how the development of civilization impacts the environment and habitat losses.

CURRICULUM STANDARD: Environmental Health

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.3.7.B Describe how human actions affect the health of the environment.</p> <ul style="list-style-type: none"> • Identify land use practices and their relation to environmental health. • Explain how natural disasters affect environmental health. • Identify residential and industrial sources of pollution and their effects on environmental health. • Explain the difference between point and nonpoint source pollution. • Explain how nonpoint source pollution can affect the water supply and air quality. • Explain how acid deposition can affect water, soil and air quality. 	<p>Teacher will guide students to:</p> <p>Describe how land use practices can help or harm the health of the environment.</p> <p>Identify a variety of natural disasters and explain how the health of the environment may be affected.</p> <p>Illustrate how residential and industrial sources of pollution may affect the health of the environment.</p> <p>Compare and contrast point and nonpoint source pollution.</p> <p>Identify examples of nonpoint source pollution and explain how the water supply and air quality can be affected.</p> <p>Describe ways acid deposition affects water, soil, and air quality.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 3: Ecology

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CURRICULUM STANDARD: Environmental Health

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.3.7.B Describe how human actions affect the health of the environment. (continued)</p> <ul style="list-style-type: none">• Explain the relationship between resource use, reuse, recycling and environmental health.	<p>Teacher will guide students to:</p> <p>Compare what resource use, reuse, recycling, and environmental health have in common.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none">▪ Student notebooks▪ Group projects▪ Partner projects▪ Individual projects▪ Homework▪ Class work▪ Teacher observation▪ Tests/Quizzes▪ Independent activities▪ Cooperative activities▪ Student Journals▪ Teacher demonstration and student observations▪ Student demonstrations▪ Oral presentations▪ Oral questions and answers▪ Worksheets▪ Concept Maps/graphic organizer▪ Diagrams▪ Portfolio▪ Rubrics	<ul style="list-style-type: none">▪ Student textbook▪ Instructors textbook▪ Textbook resources▪ Instructor generated resources▪ Internet sites▪ Science videos▪ Laser disc presentations▪ Software programs▪ Newspapers and magazines▪ Cable in the Classroom▪ Lab materials for instructor demonstrations▪ Lab materials for student demonstrations▪ Lab materials for class activities▪ Library▪ Student developed resources▪ Outside presenters▪ Community resources

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CURRICULUM STANDARD: Environmental Health

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.3.7.C Explain biological diversity.</p> <ul style="list-style-type: none">• Explain the complex, interactive relationships among members of an ecosystem.• Explain how diversity affects ecological integrity of the natural resources.	<p>Teacher will guide students to:</p> <p>Identify and explain details about how members of an ecosystem interact and the dependency on each other.</p> <p>Describe how diversity in an ecosystem may affect the integrity of natural resources.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none">▪ Student notebooks▪ Group projects▪ Partner projects▪ Individual projects▪ Homework▪ Class work▪ Teacher observation▪ Tests/Quizzes▪ Independent activities▪ Cooperative activities▪ Student Journals▪ Teacher demonstration and student observations▪ Student demonstrations▪ Oral presentations▪ Oral questions and answers▪ Worksheets▪ Concept Maps/graphic organizer▪ Diagrams▪ Portfolio▪ Rubrics	<ul style="list-style-type: none">▪ Student textbook▪ Instructors textbook▪ Textbook resources▪ Instructor generated resources▪ Internet sites▪ Science videos▪ Laser disc presentations▪ Software programs▪ Newspapers and magazines▪ Cable in the Classroom▪ Lab materials for instructor demonstrations▪ Lab materials for student demonstrations▪ Lab materials for class activities▪ Library▪ Student developed resources▪ Outside presenters▪ Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 3: Ecology

MAJOR OBJECTIVE: Conduct investigations using models or other means to explain how human activities affect local and national environments and ecosystems; describe effect of waste on the environment; describe and analyze how the development of civilization impacts the environment and habitat losses.

CURRICULUM STANDARD: Integrated Pest Management			
State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.5.7.A Explain benefits and harmful effects of pests.</p> <ul style="list-style-type: none"> Identify different examples of pests and explain the beneficial or harmful effects of each. Identify several locations where pests can be found and compare the effects the pests have on each location. 	<p>Teacher will guide students to:</p> <p>Identify beneficial and invasive pests and explain any impact of each.</p> <p>Illustrate various locations where beneficial and invasive pests inhabit and compare any impact found on each location.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> Student notebooks Group projects Partner projects Individual projects Homework Class work Teacher observation Tests/Quizzes Independent activities Cooperative activities Student Journals Teacher demonstration and student observations Student demonstrations Oral presentations Oral questions and answers Worksheets Concept Maps/graphic organizer Diagrams Portfolio Rubrics 	<ul style="list-style-type: none"> Student textbook Instructors textbook Textbook resources Instructor generated resources Internet sites Science videos Laser disc presentations Software programs Newspapers and magazines Cable in the Classroom Lab materials for instructor demonstrations Lab materials for student demonstrations Lab materials for class activities Library Student developed resources Outside presenters Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 3: Ecology

MAJOR OBJECTIVE: Conduct investigations using models or other means to explain how human activities affect local and national environments and ecosystems; describe effect of waste on the environment; describe and analyze how the development of civilization impacts the environment and habitat losses.

CURRICULUM STANDARD: Integrated Pest Management

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.5.7.B Explain how pest management affects the environment.</p> <ul style="list-style-type: none"> • Explain issues related to integrated pest management including biological technology, resistant varieties, chemical practices, medical technology, and monitoring techniques. • Describe how integrated pest management and related technology impact human activities. • Identify issues related to integrated pest management that affect the environment. 	<p>Teacher will guide students to:</p> <p>Identify examples of biological technology, resistant varieties, chemical practices, medical technology, and monitoring techniques and explain issues of each as it related to integrated pest management.</p> <p>Describe several examples of how implementing integrated pest management practices may impact human activities.</p> <p>Identify several examples of how implementing integrated pest management practices may impact the environment.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

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CURRICULUM STANDARD: Integrated Pest Management

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.5.7.C Explain various integrated pest management practices used in society.</p> <ul style="list-style-type: none">• Compare and contrast integrated pest management monitoring methods utilized in different community settings.• Compare integrated pest management to past practices.• Compare and analyze the long-term effects of using integrated pest management products.	<p>Teacher will guide students to:</p> <p>Compare and contrast various monitoring methods, in different community settings, used in an integrated pest management program.</p> <p>Relate current integrated pest management practices to how pests were controlled in the past.</p> <p>Explore and examine long-term effects of using an integrated pest management plan.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none">▪ Student notebooks▪ Group projects▪ Partner projects▪ Individual projects▪ Homework▪ Class work▪ Teacher observation▪ Tests/Quizzes▪ Independent activities▪ Cooperative activities▪ Student Journals▪ Teacher demonstration and student observations▪ Student demonstrations▪ Oral presentations▪ Oral questions and answers▪ Worksheets▪ Concept Maps/graphic organizer▪ Diagrams▪ Portfolio▪ Rubrics	<ul style="list-style-type: none">▪ Student textbook▪ Instructors textbook▪ Textbook resources▪ Instructor generated resources▪ Internet sites▪ Science videos▪ Laser disc presentations▪ Software programs▪ Newspapers and magazines▪ Cable in the Classroom▪ Lab materials for instructor demonstrations▪ Lab materials for student demonstrations▪ Lab materials for class activities▪ Library▪ Student developed resources▪ Outside presenters▪ Community resources

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CURRICULUM STANDARD: Integrated Pest Management

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.6.7.A Explain the flows of energy and matter from organism to organism within an ecosystem.</p> <ul style="list-style-type: none"> • Identify and explain the characteristics of biotic and abiotic. • Describe and explain the adaptations of plants and animals to their environment. • Demonstrate the dependency of living components in the ecosystem on the nonliving components. • Explain energy flow through a food web. • Explain the importance of the predator/prey relationship and how it maintains the balances within ecosystems. • Understand limiting factors and predict their effects on an organism. 	<p>Teacher will guide students to:</p> <p>Identify and describe biotic and abiotic factors in an ecosystem.</p> <p>Classify adaptations of plants and animals and explain how the adaptations help the plant and animal survive.</p> <p>Exhibit the importance of nonliving parts of an ecosystem to the living parts and relate the importance to survival.</p> <p>Diagram the energy flow through a food web and relate the importance of the relationships.</p> <p>Illustrate predator/prey relationships and relate to sustaining ecosystem balances.</p> <p>Identify limiting factors to make conclusions regarding effects on organisms and hypothesize ways to solve limiting factors issues.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

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CURRICULUM STANDARD: Integrated Pest Management

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.6.7.A Explain the flows of energy and matter from organism to organism within an ecosystem.</p> <ul style="list-style-type: none"> • Identify niches for producers, consumers and decomposers within an ecosystem. • Compare and contrast the major ecosystems of Pennsylvania. • Identify the major characteristics of a biome. • Compare and contrast different biomes and their characteristics. • Identify the relationship of abiotic and biotic components and give details their interaction in an ecosystem. • Explain how different soil types determine the characteristics of ecosystems. 	<p>Teacher will guide students to:</p> <p>Compare and contrast various niches and describe the role the niche plays within the ecosystem.</p> <p>Identify major ecosystems in Pennsylvania and distinguish between the similarities and differences.</p> <p>Recognize components of a biome and discover its characteristics.</p> <p>Locate different biomes and categorize their characteristics.</p> <p>Classify abiotic and biotic factors in an ecosystem and compare the interactions of organisms.</p> <p>Illustrate the different soil types in an ecosystem and relate the soil characteristics to organisms living in the ecosystem.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 3: Ecology

MAJOR OBJECTIVE: Conduct investigations using models or other means to explain how human activities affect local and national environments and ecosystems; describe effect of waste on the environment; describe and analyze how the development of civilization impacts the environment and habitat losses.

CURRICULUM STANDARD: Ecosystems and their Interactions

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.6.7.B Explain the concepts of cycles.</p> <ul style="list-style-type: none">• Identify and explain cycles within an ecosystem.• Analyze the role of different cycles within an ecosystem.	<p>Teacher will guide students to:</p> <p>Discover and illustrate the different cycles within an ecosystem.</p> <p>Evaluate and analyze the role each cycle plays within an ecosystem.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none">▪ Student notebooks▪ Group projects▪ Partner projects▪ Individual projects▪ Homework▪ Class work▪ Teacher observation▪ Tests/Quizzes▪ Independent activities▪ Cooperative activities▪ Student Journals▪ Teacher demonstration and student observations▪ Student demonstrations▪ Oral presentations▪ Oral questions and answers▪ Worksheets▪ Concept Maps/graphic organizer▪ Diagrams▪ Portfolio▪ Rubrics	<ul style="list-style-type: none">▪ Student textbook▪ Instructors textbook▪ Textbook resources▪ Instructor generated resources▪ Internet sites▪ Science videos▪ Laser disc presentations▪ Software programs▪ Newspapers and magazines▪ Cable in the Classroom▪ Lab materials for instructor demonstrations▪ Lab materials for student demonstrations▪ Lab materials for class activities▪ Library▪ Student developed resources▪ Outside presenters▪ Community resources

CONTENT: Grade 7 General Science

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CURRICULUM STANDARD: Ecosystems and their Interactions

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.6.7.C Explain how ecosystems change over time.</p> <ul style="list-style-type: none"> • Explain how ecosystems change over time. • Identify the succession stages of a given ecosystem. • Explain how specific organisms may change an ecosystem. • Explain a change in an ecosystem that relates to humans. 	<p>Teacher will guide students to:</p> <p>Discuss and debate the ways ecosystems have changed and identify reasons for the changes.</p> <p>Classify the stages of succession in an ecosystem and identify examples of each stage.</p> <p>Identify different factors that change or affect an ecosystem by examining birth, death, migration, and emigration of organisms and compare to both the living and non-living components.</p> <p>Isolate changes to specific ecosystems that were caused by humans and discuss the impact on plants, animals, population, environmental cycles, natural resources, and humans.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 4: Cells

MAJOR OBJECTIVE: Conduct investigations using models or other means to explain the structure and function of plant and animal cells; predict the movement of substances through osmosis or diffusion; analyze illness and disease resulting from cellular changes.

CURRICULUM STANDARD: Biological Sciences

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.3.7.B Describe the cell as the basic structural and functional unit of living things.</p> <ul style="list-style-type: none">• Identify the levels of organization from cell to organism.• Compare life processes at the organism level with life processes at the cell level.• Explain that cells and organisms have particular structures that underlie their functions.• Describe and distinguish among cell cycles, reproductive cycles and life cycles.• Explain disease effects on structures or functions of an organism.	<p>Teacher will guide students to:</p> <p>Identify and describe the levels of organization.</p> <p>Compare life processes at the cell level to life processes at the organism level.</p> <p>Identify and explain the function of the cell including the importance of the cell parts.</p> <p>Identify the differences and similarities between cell cycles, reproductive cycles and life cycles.</p> <p>Identify and explore how various diseases affect the structure and function of an organism.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none">▪ Student notebooks▪ Group projects▪ Partner projects▪ Individual projects▪ Homework▪ Class work▪ Teacher observation▪ Tests/Quizzes▪ Independent activities▪ Cooperative activities▪ Student Journals▪ Teacher demonstration and student observations▪ Student demonstrations▪ Oral presentations▪ Oral questions and answers▪ Worksheets▪ Concept Maps/graphic organizer▪ Diagrams▪ Portfolio▪ Rubrics	<ul style="list-style-type: none">▪ Student textbook▪ Instructors textbook▪ Textbook resources▪ Instructor generated resources▪ Internet sites▪ Science videos▪ Laser disc presentations▪ Software programs▪ Newspapers and magazines▪ Cable in the Classroom▪ Lab materials for instructor demonstrations▪ Lab materials for student demonstrations▪ Lab materials for class activities▪ Library▪ Student developed resources▪ Outside presenters▪ Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 5: Human Body Systems

MAJOR OBJECTIVE: Conduct investigations using models or other means to analyze and evaluate how systems in the human body relate to each other; to apply knowledge to make better health decisions.

CURRICULUM STANDARD: Unifying Themes

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.1.7.A Explain the parts of a simple system and their relationship to each other.</p> <ul style="list-style-type: none">• Describe a system as a group of related parts that work together to achieve a desired result (e.g., digestive system).• Explain the importance of order in a system.• Apply systems analysis to solve problems.	<p>Teacher will guide students to:</p> <p>Describe and explain how the systems in the human body relate to each other.</p> <p>Examine and explain how systems function within the human body.</p> <p>Evaluate various systems and explain methods to solve problems that may exist.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none">▪ Student notebooks▪ Group projects▪ Partner projects▪ Individual projects▪ Homework▪ Class work▪ Teacher observation▪ Tests/Quizzes▪ Independent activities▪ Cooperative activities▪ Student Journals▪ Teacher demonstration and student observations▪ Student demonstrations▪ Oral presentations▪ Oral questions and answers▪ Worksheets▪ Concept Maps/graphic organizer▪ Diagrams▪ Portfolio▪ Rubrics	<ul style="list-style-type: none">▪ Student textbook▪ Instructors textbook▪ Textbook resources▪ Instructor generated resources▪ Internet sites▪ Science videos▪ Laser disc presentations▪ Software programs▪ Newspapers and magazines▪ Cable in the Classroom▪ Lab materials for instructor demonstrations▪ Lab materials for student demonstrations▪ Lab materials for class activities▪ Library▪ Student developed resources▪ Outside presenters▪ Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 6: Heredity (Genetics)

MAJOR OBJECTIVE: Conduct investigations using models or other means to analyze and evaluate the significance of reproduction as it relates to inherited characteristics; analyze the role of probability of inherited traits and genetic disorders.

CURRICULUM STANDARD: Biological Sciences

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.3.7.A Describe the similarities and differences that characterize diverse living things.</p> <ul style="list-style-type: none">Describe how the structures of living things help them function in unique ways.	<p>Teacher will guide students to:</p> <p>Identify the how living things are unique in the way they function.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none">Student notebooksGroup projectsPartner projectsIndividual projectsHomeworkClass workTeacher observationTests/QuizzesIndependent activitiesCooperative activitiesStudent JournalsTeacher demonstration and student observationsStudent demonstrationsOral presentationsOral questions and answersWorksheetsConcept Maps/graphic organizerDiagramsPortfolioRubrics	<ul style="list-style-type: none">Student textbookInstructors textbookTextbook resourcesInstructor generated resourcesInternet sitesScience videosLaser disc presentationsSoftware programsNewspapers and magazinesCable in the ClassroomLab materials for instructor demonstrationsLab materials for student demonstrationsLab materials for class activitiesLibraryStudent developed resourcesOutside presentersCommunity resources

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CURRICULUM STANDARD: Biological Sciences

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.3.7.C Know that every organism has a set of genetic instructions that determines its inherited traits.</p> <ul style="list-style-type: none"> • Identify and explain inheritable characteristics. • Identify that the gene is the basic unit of inheritance. • Identify basic patterns of inheritance (e.g., dominance, recessive, co-dominance). • Describe how traits are inherited. • Distinguish how different living things reproduce (e.g., vegetative budding, sexual). • Recognize that mutations can alter a gene. • Describe how selective breeding, natural selection and genetic technologies can change genetic makeup of organisms. 	<p>Teacher will guide students to:</p> <p>Identify and explain a variety of characteristics that can be inherited.</p> <p>Describe how the gene is the base unit of inheritance and the importance of genetics.</p> <p>Identify the different types of inherited traits including dominant, recessive, and co-dominance.</p> <p>Explain how traits are inherited through reproduction.</p> <p>Compare the differences between sexual and asexual reproduction.</p> <p>Describe a variety of mutations and explain how the mutation may help or hurt an organism's chance of survival.</p> <p>Explain how the genetic makeup of organisms can change based on natural selection and selective breeding.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 7: Natural Selection

MAJOR OBJECTIVE: Conduct investigations using models or other means to describe the process of natural selection and resulting new species; explain species changes over time; explain theories of evolution.

CURRICULUM STANDARD: Biological Sciences

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.3.7.D Explain basic concepts of natural selection.</p> <ul style="list-style-type: none"> • Identify adaptations that allow organisms to survive in their environment. • Describe how an environmental change can affect the survival of organisms and entire species. • Know that differences in individuals of the same species may give some advantage in surviving and reproducing. • Recognize that populations of organisms can increase rapidly. • Describe the role that fossils play in studying the past. • Explain how biologic extinction is a natural process. 	<p>Teacher will guide students to:</p> <p>Describe adaptations found in several organisms and explain how the adaptation helps it survive.</p> <p>Examine a variety of environmental changes and how they affect an organism’s survival.</p> <p>Identify differences in some individuals and explain how the differences may aid in reproduction and survival.</p> <p>Identify reasons populations might increase quickly.</p> <p>Illustrate how examining fossils can help explain the evolution of organisms.</p> <p>Describe biologic extinction and explain how it is a natural process.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none"> ▪ Student notebooks ▪ Group projects ▪ Partner projects ▪ Individual projects ▪ Homework ▪ Class work ▪ Teacher observation ▪ Tests/Quizzes ▪ Independent activities ▪ Cooperative activities ▪ Student Journals ▪ Teacher demonstration and student observations ▪ Student demonstrations ▪ Oral presentations ▪ Oral questions and answers ▪ Worksheets ▪ Concept Maps/graphic organizer ▪ Diagrams ▪ Portfolio ▪ Rubrics 	<ul style="list-style-type: none"> ▪ Student textbook ▪ Instructors textbook ▪ Textbook resources ▪ Instructor generated resources ▪ Internet sites ▪ Science videos ▪ Laser disc presentations ▪ Software programs ▪ Newspapers and magazines ▪ Cable in the Classroom ▪ Lab materials for instructor demonstrations ▪ Lab materials for student demonstrations ▪ Lab materials for class activities ▪ Library ▪ Student developed resources ▪ Outside presenters ▪ Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 7: Natural Selection

MAJOR OBJECTIVE: Conduct investigations using models or other means to describe the process of natural selection and resulting new species; explain species changes over time; explain theories of evolution.

CURRICULUM STANDARD: Threatened, Endangered, and Extinct Species

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 4.7.7.B Explain how species of living organisms adapt to their environment.</p> <ul style="list-style-type: none">• Explain the role of individual variations in natural selection.	<p>Teacher will guide students to:</p> <p>Describe variations that can occur in natural selection.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none">▪ Student notebooks▪ Group projects▪ Partner projects▪ Individual projects▪ Homework▪ Class work▪ Teacher observation▪ Tests/Quizzes▪ Independent activities▪ Cooperative activities▪ Student Journals▪ Teacher demonstration and student observations▪ Student demonstrations▪ Oral presentations▪ Oral questions and answers▪ Worksheets▪ Concept Maps/graphic organizer▪ Diagrams▪ Portfolio▪ Rubrics	<ul style="list-style-type: none">▪ Student textbook▪ Instructors textbook▪ Textbook resources▪ Instructor generated resources▪ Internet sites▪ Science videos▪ Laser disc presentations▪ Software programs▪ Newspapers and magazines▪ Cable in the Classroom▪ Lab materials for instructor demonstrations▪ Lab materials for student demonstrations▪ Lab materials for class activities▪ Library▪ Student developed resources▪ Outside presenters▪ Community resources

CONTENT: Grade 7 General Science

CORE CONCEPT 8: Taxonomy

MAJOR OBJECTIVE: Conduct investigations using models or other means to understand and apply applications of classification; explain seven levels of taxonomy.

CURRICULUM STANDARD: Biological Sciences

State Standard/Student Expectation	Specific Content	Assessments	Resources/Materials
<p>PA Standard 3.3.7.A Describe the similarities and differences that characterize diverse living things.</p> <ul style="list-style-type: none">• Explain how to use a dichotomous key to identify plants and animals.	<p>Teacher will guide students to:</p> <p>Describe and use a dichotomous key to identify a variety of plants and animals.</p>	<p>Teacher evaluation of:</p> <ul style="list-style-type: none">▪ Student notebooks▪ Group projects▪ Partner projects▪ Individual projects▪ Homework▪ Class work▪ Teacher observation▪ Tests/Quizzes▪ Independent activities▪ Cooperative activities▪ Student Journals▪ Teacher demonstration and student observations▪ Student demonstrations▪ Oral presentations▪ Oral questions and answers▪ Worksheets▪ Concept Maps/graphic organizer▪ Diagrams▪ Portfolio▪ Rubrics	<ul style="list-style-type: none">▪ Student textbook▪ Instructors textbook▪ Textbook resources▪ Instructor generated resources▪ Internet sites▪ Science videos▪ Laser disc presentations▪ Software programs▪ Newspapers and magazines▪ Cable in the Classroom▪ Lab materials for instructor demonstrations▪ Lab materials for student demonstrations▪ Lab materials for class activities▪ Library▪ Student developed resources▪ Outside presenters▪ Community resources

V. EXPECTED LEVELS OF ACHIEVEMENT

- A. Students are expected to reach the seventh grade level of achievement in science. These skills include all of those noted in the specific content area of this curriculum.
- B. Grading system for all seventh grade science classes is as follows:

Grading Scale	
A	90 -100
B	80 - 89
C	70 - 79
D	60 - 69
F	0 - 59

- C. Each student's grade will be determined at the conclusion of each marking period.