

Pine Hill Public Schools Curriculum

Content Area:		Science	
Course Title/ Grade Level:		Science – Grade 7	
Unit 1:	Nature of Science	Month:	September
Unit 2:	Structure and Function	Month:	October/November
Unit 3:	Space Science	Month:	December/January
Unit 4:	Geology	Month:	February/March
Unit 5:	Rocks and Minerals	Month:	March/April
Unit 6:	Earth Science	Month:	May/June
BOE Approval Date:		August 23, 2011	

**Pine Hill Public Schools
Science Curriculum**

Unit Title: Earth Systems		Unit #: 1
Course or Grade Level: 7		Length of Time:
Date Created:		BOE Approval Date:
Pacing	•	
Essential Questions	<ul style="list-style-type: none"> • How does conservation of mass apply to the interaction of materials in a closed system? • To what extent does the exchange of energy within the Earth drive geologic events on the surface? • What is the role of the sun in energy transfer in the atmosphere and in the oceans? • How is matter transformed, and energy transferred/transformed in living systems? • In what ways do organisms interact within ecosystems? 	
Content	<ul style="list-style-type: none"> • Photosynthesis (5.3.6.B.1) (5.2.8.B.2) • Cellular respiration (5.3.6.B.1) (5.2.8.B.2) • Ocean currents (5.4.8.E.1) • Human impact on local and global environments (5.3.6.C.2) • Air pollution • Water pollution • Water cycle • Nitrogen cycle • Carbon cycle 	
Skills	<ul style="list-style-type: none"> • Diagram carbon, nitrogen and water cycles • Write the equation for photosynthesis and respiration • Create a bar graph showing CO₂ usage by families • Conduct lab investigation 	
Math Skills/ Science Processes	•	
Assessments	<p>FORMATIVE: label smart board diagrams, create your own diagram of cycles, label pictures of mitochondria and chloroplast showing photosynthesis and respiration</p> <p>SUMMATIVE: poster presentation of causes/effects of pollution, quizzes, test</p>	
Interventions / differentiated instruction	•	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Math – graphing • Lang Arts – reading, writing, vocab • Social Studies – Global connections 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Earth Science Glencoe • Prentice Hall Science Explorer (Earth Science) • McGraw Hill 2002 • Resource box for book including tests, worksheets, enhancements, overhead transparencies 	

	<ul style="list-style-type: none"> • Teacher created smart board lessons • Brain Pop videos • Current Event articles
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2009 NJCCCS

Standard: 5.2 Physical Science
5.3 Life Science
5.4 Earth Systems Science

Strand(s):

Strand B. Changes in Matter: Substances can undergo physical or chemical changes to form new substances. Each change involves energy.

5.3.6.C

5.4.8.E

Content Statement(s):

CPI # / CPI(s):

Describe the sources of the reactants of photosynthesis and trace the pathway to the products

5.3.6.B.1

Explain how energy from the Sun is transformed or transferred in global wind circulation, ocean circulation, and water cycle

5.4.8.E.1

Predict the impact that altering biotic and abiotic factors has on an ecosystem

5.3.6.C.2

Compare and contrast the physical properties of reactants with products after a chemical reaction, such as those that occur during photosynthesis and cellular respiration

5.2.8.B.2

21st Century Themes

x	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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21st Century Skills

	Creativity and Innovation	x	Critical Thinking and Problem Solving	x	Communication and Collaboration		Information Literacy
x	Media Literacy		ICT Literacy		Life and Career Skills		

**Pine Hill Public Schools
Science Curriculum**

Unit Title: Your Healthy Body		Unit #: 2
Course or Grade Level: 7		Length of Time:
Date Created:		BOE Approval Date:
Pacing	•	
Essential Questions	<ul style="list-style-type: none"> • What do all living things have in common? • How do our bodies respond to and adapt to the world? 	
Content	<ul style="list-style-type: none"> • Organs and functions of the skeletal, muscular, digestive, respiratory, circulatory, nervous, and immune systems • Environmental factors and the bodies ability to maintain homeostasis • Interdependence of body systems 	
Skills	<ul style="list-style-type: none"> • Identify the 5 functions of the skeletal system • Compare/contrast moveable and immoveable joints • Label and identify layers of the bone • Label bones of the body • Identify 3 types of muscle tissue and their location in the body • Describe how muscles work in pairs • Identify the 6 functions of the skin • Label and identify the 3 layers of skin and their functions • Identify organs of the digestive system and the process that occurs in each • Name and label the 4 chambers of the human heart • Describe the flow of blood through the heart and the human body • Describe the different parts of blood • Describe the exchange of carbon dioxide in the lungs • Label, identify and define the organs of the respiratory system • Identify the organs of the excretory system • Explain how waste products are formed and removed by the body • Compare/contrast active and passive immunity • Identify the 3 types of neurons of the nervous system • Describe the path of an impulse • Compare/contrast the peripheral and central nervous systems • Identify and discuss various disease of human body systems 	
Math Skills/ Science Processes	•	
Assessments	<ul style="list-style-type: none"> • FORMATIVE: graphic organizers, flow chart(s) of functions, diagramming, quizzes • SUMMATIVE: models of body systems, dissection (deer heart), lab investigations, tests 	
Interventions / differentiated instruction	•	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Language Arts – reading comprehension, vocabulary • Art – diagramming, models • Math – measuring 	

	<ul style="list-style-type: none"> • Phys. Ed – reaction time lab, heart rate lab, body system charades • Social Studies – Historical events (Blue Baby Syndrome)
Lesson resources / Activities	<ul style="list-style-type: none"> • Life Science Glencoe • Prentice Hall Science Explorer (Life Science) • Resource box for book including tests, worksheets, enhancements, overhead transparencies • Teacher created smart board lessons • Brain Pop videos • Current Event articles

2009 NJCCCS

Standard:

Strand(s):

Content Statement(s):

CPI # / CPI(s):

5.3.6.A.1

5.3.8.A.1

5.3.8.A.2

21st Century Themes

Global Awareness	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy
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21st Century Skills

Creativity and Innovation	Critical Thinking and Problem Solving	Communication and Collaboration	Information Literacy
Media Literacy	ICT Literacy	Life and Career Skills	

**Pine Hill Public Schools
Science Curriculum**

Unit Title: Where are we now?		Unit #: 3
Course or Grade Level:		Length of Time:
Date Created:		BOE Approval Date:
Pacing	•	
Essential Questions	<ul style="list-style-type: none"> • What causes the sun and moon to look different throughout the year? • How is Earth similar to and different from other planets/celestial bodies? • How do we know that things have energy? • To what extent does the exchange of energy within Earth drive geologic events on the surface? • What predictable, observable patterns occur as a result of the interaction between the Earth, Moon, and Sun? What causes these patterns • How do changes in one part of an Earth system affect other parts of the system? 	
Content	<ul style="list-style-type: none"> • Sun's apparent motion across the sky • Physical characteristics of Earth (geologic layers and atmospheric layers) • Physical characteristics of other objects in the solar system • Rotation/revolution • Phases of the moon and eclipses • Causes of tides • Causes of seasons • Model of the solar system (S-E-M) • Comets, asteroids, space junk • Discovery of new planets (Kepler's Laws) 	
Skills	<ul style="list-style-type: none"> • Describe the internal composition of the Earth • Compare/contrast rotation and revolution • Compare/contrast solstice and equinox • Clarify and discuss the misconceptions behind why the season changes occur on Earth • Describe, define, draw and detect the various phase changes that occur during a lunar month • Identify the characteristics of all 8 planets (3 dwarf planets) • Explain how Kepler's Law is used to discover new planets and bodies in the solar system • Diagram neap and spring tides 	
Math Skills/ Science Processes	•	
Assessments	<ul style="list-style-type: none"> • FORMATIVE: construct a model or drawing of relative positions of Sun, Earth, and Moon during various solar events (eclipse, solstice, equinox), label smart board diagrams, construct a 3-D model to demonstrate seasons in the different hemispheres • SUMMATIVE: webquest, student made calendar showing lunar phases during the month, test 	
Interventions / differentiated instruction	•	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • History – research history of space travel and famous astronauts; what impact space travel has on society • Math – calculations for spherical shape of Earth, and discussion of formula for revolution and 	

	ellipses <ul style="list-style-type: none"> • Art – poster illustrating Sun-Earth-Moon spatial relationships during specific celestial events; • Music - listening to “The Planets” Holst • Language Arts – poetry inspired by the planets
Lesson resources / Activities	<ul style="list-style-type: none"> • Earth Science Glencoe • Prentice Hall Science Explorer (Earth Science) • McGraw Hill 2002 • Resource box for book including tests, worksheets, enhancements, overhead transparencies • Teacher created smart board lessons • Brain Pop videos • Current Event Articles

2009 NJCCCS

Standard: 5.4 Earth Systems Science

Strand(s): 5.4 A Objects in the universe

Content Statement(s):	CPI # / CPI(s):
	5.4.8.D.1
	5.4.8.C.3
	5.2.8.C.2
	5.4.6.A.1
	5.4.6.A.2
	5.4.6.A.3
	5.4.6.A.4
	5.4.8.A.1
	5.4.8.A.2

21st Century Themes

	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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21st Century Skills

	Creativity and Innovation		Critical Thinking and Problem Solving		Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy		Life and Career Skills		

**Pine Hill Public Schools
Science Curriculum**

Unit Title: Geologic Time		Unit #: 4
Course or Grade Level:		Length of Time:
Date Created:		BOE Approval Date:
Pacing	•	
Essential Questions	<ul style="list-style-type: none"> • How do geologic events occurring today provide insight Earth’s past? • How do changes in one part of an Earth system affect other parts of the system? • In what ways are organisms of the same kind different from each other? How does this help them reproduce and survive? 	
Content	<ul style="list-style-type: none"> • Evolution of organisms (one-celled organisms to current) • Evolution of Earth’s surface/environmental conditions • Plate tectonics • Organisms present in Precambrian, Paleozoic, Mesozoic, Cenozoic era • Interpretation of Earth’s history using fossil record and the concept Uniformitarianism • 1st appearance of humans • 	
Skills	<ul style="list-style-type: none"> • Discuss natural selection and how it has shaped the Earth • Draw conclusions about how species adapted to changing environments over time • Relate changes of Earth’s organisms to divisions on the geologic time scale • Create a timeline showing the divisions of geologic time • Explain the events that helped shape the Earth • Identify the characteristics of Precambrian, Paleozoic, Mesozoic, and Cenozoic Eras 	
Math Skills/ Science Processes	•	
Assessments	<ul style="list-style-type: none"> • FORMATIVE: Homework, analyze fossil replicas (specifically trilobites), observe rock samples, view NOVA grand canyon and discuss • SUMMATIVE: Tests, quizzes, labs, timeline showing geologic evolution 	
Interventions / differentiated instruction	•	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • History – timelines • Math –algebraic calculations, measuring • Lang Arts – reading, writing, vocabulary 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Earth Science Glencoe • Prentice Hall Science Explorer (Earth Science) • Prentice Hall Science Explorer (Life Science) • Resource box for book including tests, worksheets, enhancements, overhead transparencies 	

	<ul style="list-style-type: none"> • Teacher created smart board lessons • Brain Pop videos • Current Event articles • fossil collections • 3D model of Earth
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2009 NJCCCS

Standard:

Strand(s):

Content Statement(s):	CPI # / CPI(s):
How do geologic events occurring today provide insight Earth's past?	5.4.8.B.1
How do geologic events occurring today provide insight Earth's past?	5.4.8.B.2
How do changes in one part of an Earth system affect other parts of the system?	5.4.6.C.3
	5.3.6.E.1
	5.3.8.E.2

21st Century Themes

	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
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21st Century Skills

	Creativity and Innovation		Critical Thinking and Problem Solving		Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy		Life and Career Skills		

**Pine Hill Public Schools
Science Curriculum**

Unit Title: Changing Earth's Surface		Unit #: 5
Course or Grade Level: 7th		Length of Time:
Date Created:		BOE Approval Date:
Pacing		
Essential Questions	<ul style="list-style-type: none"> • How do changes in one part of an Earth system affect other parts of the system? 	
Content	<ul style="list-style-type: none"> • Characteristics of igneous, metamorphic, and sedimentary rock • Rock Cycle as a model of the changes that a rock can undergo • Processes that rocks undergo during transformation from one form to another • Evidence of past geologic events through rock formations 	
Skills	<ul style="list-style-type: none"> • Identify characteristics of igneous, metamorphic, and sedimentary rock • Describe the rock cycle and name processes that rocks undergo to become other rocks • Describe the conditions of the Earth that cause igneous, metamorphic, and sedimentary rocks to form • Model the rock cycle • Describe and classify rocks based on various physical and chemical characteristics • Identify rocks as basis of soil and everyday objects 	
Math Skills/ Science Processes	<ul style="list-style-type: none"> • 	
Assessments	<ul style="list-style-type: none"> • FORMATIVE: observation/classifying rock samples, foldable/diagram of rock cycle, cross-curricular reading comprehension articles, quizzes • SUMMATIVE: Tests, Labs, Demonstrations (physical/chemical characteristics of rocks) 	
Interventions / differentiated instruction	<ul style="list-style-type: none"> • 	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Lang Arts – reading, writing, vocabulary • Social Studies – history of geologic formations and events 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Earth Science Glencoe • Prentice Hall Science Explorer (Earth Science) • Resource box for book including tests, worksheets, enhancements, overhead transparencies • Teacher created smart board lessons • Brain Pop videos • Current Event articles • fossil collections • 3D model of Earth • Washington Collection Rock samples 	
2009 NJCCCS		
Standard: 5.4		

Strand(s): C							
Content Statement(s):				CPI # / CPI(s):			
				5.4.6.C.2 5.4.6.C.3 .			
<u>21st Century Themes</u>							
	Global Awareness		Financial, Economic, Business, and Entrepreneurial Literacy		Civic Literacy		Health Literacy
<u>21st Century Skills</u>							
	Creativity and Innovation		Critical Thinking and Problem Solving		Communication and Collaboration		Information Literacy
	Media Literacy		ICT Literacy		Life and Career Skills		

Revised: August 28,2012

**Pine Hill Public Schools
Science Curriculum**

Unit Title: Soil Formation		Unit #: 6
Course or Grade Level: 7		Length of Time:
Date Created:		BOE Approval Date:
Pacing	•	
Essential Questions	<ul style="list-style-type: none"> • How do changes in one part of the Earth system affect other parts of the system and in what ways can Earth processes be explained as interactions among spheres? • In what ways do organisms interact within ecosystems? • How do geologic events occurring today provide insight Earth's past? 	
Content	<ul style="list-style-type: none"> • Effects of weathering on soil • Types of weathering • Factors that affect weathering • Characteristics of soil • Soil profile (texture, mineral content, formation) • Soil as a material that supports life • Areas of Unites States and their soil types • Soil conservation and uses as a resource • Management of human waste as a global concern 	
Skills	<ul style="list-style-type: none"> • Explain how soil develops from rock, weathering, and organic processes • Describe soil by comparing soil horizons • Describe the factors (plants, animals, weathering/erosion) that affect the development of soil • Identify and describe the parts of a soil profile • Identify the properties of soil that are necessary for plant and animal survival • Identify human activities that lead to soil loss • Describe ways to reduce soil loss • Explain how soil as one of Earth's most valuable resources • Compare/contrast techniques used to manage waste 	
Math Skills/ Science Processes	•	
Assessments	<ul style="list-style-type: none"> • FORMATIVE: labeling on SmartBoard, examining soil samples, reading/analyzing soil maps of N.America, homework, demonstration (soil erosion) • SUMMATIVE: Labs (plant growth in different soils), poster project (waste disposal/conservation) 	
Interventions / differentiated instruction	•	
Inter-disciplinary Connections	<ul style="list-style-type: none"> • Social Studies – Historical event and geologic formations, global human impact (agricultural vs. modernized societies), reading maps • Math – measuring, graphing 	
Lesson resources / Activities	<ul style="list-style-type: none"> • Earth Science Glencoe • Prentice Hall Science Explorer (Earth Science) • Resource box for book including tests, worksheets, enhancements, overhead 	

	transparencies <ul style="list-style-type: none"> • Teacher created smart board lessons • Brain Pop videos • Current Event articles
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2009 NJCCCS

Standard:

Strand(s):

Content Statement(s):	CPI # / CPI(s):
	5.3.6.C.1
	5.4.8.C.2
	5.4.6.B.3
	5.4.6.C.1
	5.4.8.C.1
	5.4.8.C.2
	5.4.6.B.4
	5.4.6.G.2
	5.4.6.G.3

21st Century Themes

Global Awareness	Financial, Economic, Business, and Entrepreneurial Literacy	Civic Literacy	Health Literacy
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21st Century Skills

Creativity and Innovation	Critical Thinking and Problem Solving	Communication and Collaboration	Information Literacy
Media Literacy	ICT Literacy	Life and Career Skills	