

Catasauqua Area School District Planned Course of Study

Course Title: Physical Science

Grade Level(s): 9

Text: CK12

Course Description

Physical Science is a full-semester course that investigates the fundamentals of Physics, Chemistry, Earth Science, and Biology. Math skills will be called upon as force, motion, and energy are investigated. The properties of matter, atomic structure, and chemical interactions allow the student to acquire an understanding of the world around them at a microscopic level. The discussion of rocks, minerals, crystal structures, plate tectonics, and weather will give students an understanding of the physical world around us. Characteristics of living things, cell structure and function, and ecology will be discussed in a way that allows students to recognize living things around them.

Essential Questions & Competencies

Chemistry

How can one explain the structure, properties and interactions of matter?

Physics

How are Earth's systems and cycles driven by energy?

Earth Science

1. How is the internal structure of the Earth organized and classified?
2. In what ways do changes in the atmosphere affect Earth?
3. What roles do reservoirs and water transfer play in weather, climate variation and temperature moderation?
4. How is technology used to gather, monitor, and predict Earth's changing surface and internal composition?
5. How do humans impact or utilize Earth and its processes?

Biology

1. How do we know if something is alive?
2. How does life result from cellular structure and function?
3. How do organisms interact and depend on each other and their environment for survival?
4. How do different organisms obtain and use energy to survive in their environment?

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Course Syllabus

Course Content	Tentative Timeframe	Assessment Anchors	State Standards
Nature of Matter <ul style="list-style-type: none"> ● Laboratory Usage <ul style="list-style-type: none"> a.Laboratory Safety b.Laboratory Equipment c.Laboratory Techniques ● Measurement <ul style="list-style-type: none"> a. MKS System b.Dimensional Analysis c.Significant Figures d.Scientific Notation eUncertainty, Reliability <ul style="list-style-type: none"> 1. Precision 2. Accuracy 	2 weeks	S11.A.1.1.1 Thru S11A.1.1.5 S11A.2.2.1	3.1.10 A & E 3.2.10 A & B 3.7.10.B 3.8.10.B
Properties of Matter <ul style="list-style-type: none"> ● Phases of Matter ● Properties of Solids ● Properties of Liquids ● Properties of Gases ● Changes of State and Phase Diagrams 	1 week	S.11.C.2.1.1 S.11.C.2.1.2	3.4.10.A & B 4.1.10B 4.6.10.A
Atomic Structure <ul style="list-style-type: none"> ● Modern Atomic Theory ● Quantum Atomic Model ● Subatomic Particles <ul style="list-style-type: none"> a.Protons b.Neutrons c.Electrons ● Using the Periodic Table ● Periodic Trends ● Groups of the Elements 	1 week	S11.C.1.1.1 S11.C.1.1.2 S11.A.3.2.3 S11.A.3.2.2 S11.A.3.2.1	3.4.10 A & B 4.6.10.A 3.1.10B 3.2.10B
Chemical Interactions	2 weeks	S11.C.2.1.2 S11.C.1.1.6	3.4.10 A & B

<ul style="list-style-type: none"> ● Classifying Chemical Reactions ● Predicting Chemical Reactions 			
Motion <ul style="list-style-type: none"> ● Motion is relative ● Speed and its measurement ● Velocity ● Acceleration ● Free fall: Speed ● Free fall: Distance ● Graphs of Motion 	2 weeks	N/A	3.2.P.B1 3.2.P.B2 3.2.P.B7 3.2.P.B1 3.2.P.B7 CC.3.5.11-12.D CC.3.6.11-12.A.,B
Newton's Laws and Force <ul style="list-style-type: none"> ● 1st Law ● Inertia ● Weight ● Newton's 2nd Law ● Newton's 3rd Law 	1 week	N/A	3.2.10.B1 3.2.P.B7 3.2.P.B1 3.2.P.B7 CC.3.5.11-12.D CC.3.6.11-12. A.,B
Energy, Work and Machines <ul style="list-style-type: none"> ● Work ● Power ● Potential Energies ● Kinetic Energy ● Conservation of Energy ● Simple Machines – levers, pulleys and inclined planes 	2 weeks	N/A	3.2.10.B2 3.2.P.B2 3.2.12.B2 3.2.C.B3 3.2.P.B7 3.2.12.B7 CC.2.4.HS.B2 CC.2.4.HS.B3 CC.3.5.11-12.D CC.3.6.11-12.A.,B
Minerals and Crystal Structures <ul style="list-style-type: none"> ● Composition ● Classification ● Identification 	1 week	N/A	3.3.10.A1. 3.2.10.A1.
Rocks <ul style="list-style-type: none"> ● Composition ● Classification/identification ● Rock cycle 	1 week	N/A	3.3.10.A1. 3.3.10.A4. 3.3.10.A7.
Plate Tectonics <ul style="list-style-type: none"> ● Layers of Earth ● Energy Transfer ● Dynamics and Change ● Relation of Tectonics to Surface Features 	1 week	N/A	3.3.10.A1. 3.3.10.A3. 3.3.10.A4. 3.3.10.A7.
Atmosphere and Weather	1 week	N/A	3.3.10.A4.

<ul style="list-style-type: none"> • Layers • Influences on climate • Heat transfer • Wind • Clouds • Precipitation 			3.4.10.E3. 3.2.10A1. 3.3.10.A4. 3.3.10.A5. 3.3.10.A6. 3.3.10.A7. 3.4.10.E3. 3.2.10A1.
Cells and Characteristics of Living Things <ul style="list-style-type: none"> • Common characteristics to all living things • Cell structure and function 	1 week	BIO.A.1.1 BIO.A.1.2	3.1.B.A1
Ecology <ul style="list-style-type: none"> • Organization • Biotic vs. abiotic components • Ecological relationships • Cycles of matter • Energy flow 	2 weeks	BIO.B.4.1 BIO.B.4.2	4.1.10.A 4.1.10.C 4.1.10.E 4.2.10.A

Teaching Strategies Utilized

Direct Instruction
 Modeling
 Simulations
 Current Events
 Inquiry Based Learning
 Lab Exploration
 Debate

Guided Practice
 Cooperative Learning
 Flipped Classroom
 Peer Review & Teaching
 Independent Learning
 Visualization
 Differentiation

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<p>The student will be able to:</p> <p><u>The Nature of Science</u></p> <p>Explain and put into practice the basic safety rules required within the laboratory.</p> <p>Identify the metric units of measurement used in Chemistry</p> <p>Use the rules of Significant Figures and Scientific Notations to complete calculations and collect data.</p> <p>Use dimensional analysis and conversion factors to solve problems</p> <p>Explain what causes uncertainty in measurement.</p> <p>Compare Accuracy and Precision</p> <p>Explain why knowledge of Chemistry is central to scientific and human knowledge.</p> <p>List and describe the steps of the Scientific Method.</p> <p>Name the basic forms of energy.</p> <p>Identify the states of matter</p> <p>Compare physical and chemical properties of matter</p> <p>State the Laws of Conservation of Mass and Energy</p> <p>Explain the difference between elements and compounds.</p>	<p>K, A</p> <p>K, A</p> <p>K, A</p> <p>K, A</p> <p>AW</p> <p>K</p> <p>AW</p> <p>K, A</p> <p>K</p> <p>K, A</p> <p>K, A</p> <p>K</p> <p>K</p>	<p>Teacher designed projects</p> <p>Laboratory demonstration</p> <p>Homework</p> <p>Class Discussion</p> <p>Class/Group work</p>	<p>Quizzes</p> <p>Tests</p> <p>Homework</p> <p>Graded Activities and Assignments</p> <p>Lab Reports</p>	<p>S11.A.1.1.1 S11.A.1.1.2 S11.A.1.1.3 S11.A.1.1.4 S11.A.1.1.5 S11A.2.2.1</p>	<p>3.1.10 A & E 3.2.10 A & B 3.7.10.B 3.8.10.B</p>
Resources/Materials					
<p>Textbook Student Study Guide Calculators Laboratory Equipment Chemicals Worksheets & Lab Manuals Video</p>					
Interdisciplinary Relationships					
<p>Technology – Computer based data collection and analysis Mathematics – Algebra to describe physical measurement and analysis of equations History – Study the evolution of the measurement processes Writing – Provide written explanations of physical phenomena and formal lab reports.</p>					

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<p><u>Motion</u></p> <p><i>The student will be able to:</i></p> <p>Recognize that we (and scientists) start with simplified examples of motion.</p> <p>Measure an object's speed with simple tools.</p> <p>Explain that motion is relative.</p> <p>Define speed and distinguish between instantaneous speed and average speed.</p> <p>Distinguish between speed and velocity.</p> <p>Describe the three ways velocity can change.</p> <p>Define acceleration and give examples of its units.</p> <p>Describe the motion of an object in free fall.</p> <p>Describe the motion of an object thrown straight up and allowed to fall until it hits the ground.</p> <p>Determine the speed and the distance fallen at any time after the projectile is dropped from rest.</p> <p>Explain how graphs can be used to describe relationships among time, distance, and speed.</p> <p>Explain how acceleration is a rate of a rate.</p>	<p>AW</p> <p>AP</p> <p>K</p> <p>AP</p> <p>K</p> <p>K</p> <p>AP</p> <p>M</p> <p>M</p> <p>AP</p> <p>K</p>	<ul style="list-style-type: none"> · Inquiry based Learning Activities · Class Discussions · Teacher/student Model Skills · Teacher/Student Model Problem Solving · Individualized instruction · Cooperative Learning · Peer Tutoring · Teacher Tutoring · Homework · Content Reviews · Technology Applications · Worksheets 	<ul style="list-style-type: none"> · Diagnostic Formative Assessments · Diagnostic Summative Assessments · Content Quizzes · Tests · Homework · Lab Reports · Observations during activities 	<p>Not applicable</p>	<p>3.2.P.B 1</p> <p>3.2.P.B 7</p> <p>3.2.12. B7</p> <p>CC.3.5.1 1-12.D</p> <p>CC.3.6.1 1-12. A.,B</p>

Resources/Materials

Textbook, LabPro & Vernier Software, Meter Sticks, Tape Measure, Practice & Review Worksheets, Internet Resources, iPads, Calculators, Accelerometer, Stopwatch

Interdisciplinary Relationships

- Technology – Computer based data collection and analysis
- Mathematics – Algebra to describe physical phenomena
- History – Historical context of Copernican revolution and Galileo's discoveries
- Writing – Provide written explanations of physical laws and formal lab reports.

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<p><u>Newton's Laws of Motion and Forces</u></p> <p><i>The student will be able to:</i></p> <p>Apply Newton's 1st Law of Motion to examples of everyday motion.</p> <p>Distinguish among mass, volume, and weight and their units of measure.</p> <p>Explain the relationship between the motion of an object and the net external force acting on it.</p> <p>Explain that constant velocity occurs when the net external force on an object equals zero.</p> <p>Explain that when the net external force on an object equals zero it exhibits constant velocity</p> <p>State the relationship between acceleration and net force.</p> <p>State the relationship between acceleration and mass.</p> <p>State Newton's Second Law of Motion as an equation.</p> <p>Define force as a part of an interaction.</p> <p>Explain that forces: come in pairs act on different objects have equal magnitudes have opposite directions don't cancel.</p> <p>State Newton's 3rd Law of Motion.</p> <p>Identify "action/reaction" pairs.</p>	<p>AP</p> <p>K</p> <p>AP</p> <p>M</p> <p>M</p> <p>K</p> <p>K</p> <p>K</p> <p>K</p> <p>K</p> <p>K</p> <p>M</p>	<ul style="list-style-type: none"> · Inquiry based Learning Activities · Class Discussions · Teacher/student Model Skills · Teacher/Student Model Problem Solving · Individualized instruction · Cooperative Learning · Peer Tutoring · Teacher Tutoring · Homework · Content Reviews · Technology Applications · Worksheets 	<ul style="list-style-type: none"> · Diagnostic Formative Assessments · Diagnostic Summative Assessments · Content Quizzes · Tests · Homework · Lab Reports · Observations during activities 	<p>Not applicable</p>	<p>3.2.P.B1 3.2.P.B6 3.2.P.B7 3.2.10.B1 CC.3.5.11-12.D CC.3.6.11-12. A.,B</p>

Resources/Materials

- Textbook, Practice/Review Worksheets, Calculators, Vernier Software, Scales, Internet Resources, Dynamometers, Carts, Scales

Interdisciplinary Relationships

- Technology – Computer based data collection and analysis
- Mathematics – Simple algebra to describe physical phenomena
- History – Historical context of Galileo's and Newton's discoveries, Implication to modern world
- Writing – provide written explanations of physical laws and formal lab reports.

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Energy, Work and Machines					
<i>The student will be able to:</i>					
Define and describe work as a physical quantity.	K	· Inquiry based Learning Activities	· Diagnostic Formative Assessments	Not applicable	3.2.10.B2 3.2.P.B2 3.2.12.B2 3.2.C.B3 3.2.P.B7 3.2.12.B7 CC.2.4.HS.B2 CC.2.4.HS.B3 CC.3.5.11-1 2.D CC.3.6.11-1 2.A,B
Relate work to force and displacement.	AP	· Class Discussions	· Diagnostic Summative Assessments		
Distinguish between ordinary meaning and scientific definitions of work.	K	· Teacher/student Model Skills	· Content Quizzes		
Define and describe power.	K	· Teacher/Student Model Problem Solving	· Tests		
Identify and classify several forms of energy.	K	· Individualized instruction	· Homework		
Define potential energy.	K	· Cooperative Learning	· Lab Reports		
Define kinetic energy	K	· Peer Tutoring	· Observations during activities		
Calculate the kinetic energy of an object.	AP	· Teacher Tutoring			
Apply the work-kinetic energy theorem to solve problems.	AP	· Homework			
Define and apply the work-kinetic energy theorem.	K, AP	· Content Reviews			
State the Law of Conservation of Energy.	K	· Technology Applications			
Identify how energy is conserved in different physical situations.	M	· Worksheets			
Explain how the operation of a simple machine alters the applied force and the distance moved.	AP				
Calculate the mechanical advantage of a simple machine.	AP				
Resources/Materials					
<ul style="list-style-type: none"> ● Textbook ● Practice/Review Worksheets ● Calculators ● Vernier Software ● Internet Resources ● Computers 					
Interdisciplinary Relationships					
<ul style="list-style-type: none"> · Technology – Computer based data collection and analysis · Mathematics – Algebra to describe physical phenomena, analysis of equations · History – Industrial revolution as historical context of concept of energy · Writing – Provide written explanations of physical laws and formal lab reports. 					

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Objectives	Level of Ach.	Suggested Learning Activities	Forms of Assessment	Assess. Anchor	PA Stand.
<i>The student will be able to:</i>					
<u>Classification of Matter</u>					
Name and describe the 4 states of matter.	K, A	Teacher designed projects	Quizzes	S.11.C.2.1.1	3.4.10. A & B
Compare physical and chemical properties of matter.	K, A	Laboratory activities/demonstrations	Tests	S.11.C.2.1.2	4.1.10B 4.6.10. A
State the Law of Conservation of Matter			Homework		
Compare heterogeneous and homogeneous mixtures.	AW	Homework	Graded Activities and Assignments		
Describe several techniques to separate mixtures.	K, A	Class Discussion	Lab Reports		
Use a Phase Change Diagram to identify changes in matter based on temperature and energy.	K, A	Class/Group work			
Describe the solubility properties of various solutes and solvents.	AW, K				
<u>Atomic Structure</u>					
Define the term "atom"	AW	projects	Quizzes	S11.C.1.1.1	3.4.10 A & B
Name and describe the subatomic particles of the atom.	AW, K	Laboratory activities	Tests	S11.C.1.1.2	4.6.10. A
Calculate the number of protons, neutrons and electrons in an atom or ion.	AW, K	Homework	Homework	S11A.3.2.3	3.1.10B 3.2.10B
Define atomic number, atomic mass, isotope and ion.	K	Class Discussion	Graded Activities and Assignments	S11A.3.2.2	
	K	Class/Group work	Lab Reports	S11A.#.2.1	
Resources/Materials					
<ul style="list-style-type: none"> ● Textbook ● Practice/Review Worksheets ● Calculators ● Internet Resources ● Computers 					
Interdisciplinary Relationships					
<p>Technology – Computer based data collection and analysis Mathematics – Algebra to describe physical phenomena, analysis of equations History – Industrial revolution as historical context of atomic structure Writing – Provide written explanations of physical laws and formal lab reports.</p>					

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<p><i>The student will be able to:</i></p> <p>Explain why elements in the same group have similar properties.</p> <p>Compare the properties and behaviors of the elements.</p> <p>Give examples of uses of the elements.</p> <p><u>Chemical Interactions</u></p> <p>Describe the characteristics of a chemical reaction</p> <p>Identify a balanced chemical equation.</p> <p>Classify Chemical Reactions as: Synthesis Decomposition Single Displacement Double Displacement</p> <p>Describe the characteristics of a chemical reaction.</p> <p>Distinguish between endothermic and exothermic reactions</p> <p>Compare heat and temperature</p>	<p></p> <p>K</p> <p>K, A</p> <p>K, A</p> <p>K</p> <p>K, A</p> <p>K</p>	<p>Teacher designed projects</p> <p>Laboratory activities</p> <p>Homework</p> <p>Class Discussion</p> <p>Class/Group work</p>	<p>Quizzes</p> <p>Tests</p> <p>Homework</p> <p>Graded Activities and Assignments</p> <p>Lab Reports</p>	<p>S.11.A.3.3.1</p> <p>S.11.A.3.3.2</p> <p>S.11.C.1.1.4</p> <p>S11.C.2.1.3</p> <p>S11.C.1.1.6</p>	<p>3.1.10.C</p> <p>3.4.10.A</p> <p>3.2.10.B</p> <p>3.4.10 A & B</p>
Resources/Materials					
<ul style="list-style-type: none"> ● Textbook ● Practice/Review Worksheets ● Calculators ● Internet Resources ● Computers 					
Interdisciplinary Relationships					
<p>Technology – Computer based data collection and analysis</p> <p>Mathematics – Algebra to describe physical phenomena, analysis of equations</p> <p>History – Industrial revolution as use for chemical discoveries</p> <p>Writing – Provide written explanations of physical laws and formal lab reports.</p>					

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<p><i>The student will be able to:</i> Minerals and Crystal Structure Define Mineral</p> <p>Explain mineral distribution</p> <p>Collecting scientific observations</p> <p>Summarize importance of Periodic Table of elements</p> <p>Explain atoms and elements as they pertain to minerals</p> <p>Explain mineral formation</p> <p>Identify minerals through accepted scientific tests with specific procedures</p>	M	Lab activity	Kahoot	Not applicable	3.3.10. A1.
	M	Teacher demonstration	Homework		
	M	Interactive media	Bell ringers		
	M	Peer discussion	Lab sheets		
	AP	Class discussion	Worksheets		
	AP	Kahoot	Teacher observation		
	M	Exit tickets	Submitted discussions via CANVAS		
	M	Bell Ringers	Lab activity		
		Outline/notes	Test		
		Diagramming			
	Critical reading				
	Controlled research				
	Lab Activity				
	Concept Mapping				
Resources/Materials					
Text, teacher created reading, current articles, worksheets, ipads, streak plates, mineral samples, hand lens, diluted HCL, density kit, beakers, digital scale, class models					
Interdisciplinary Relationships					
Math- Specific gravity calculations Reading & Writing Lab Activities					

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The student will be able to: Rocks		Concept mapping	Kahoot	Not applicable	3.3.10. A1. 3.3.10. A4. 3.3.10. A7.
Identify the 3 major groups of rocks	M	Lab activity	Homework		
Identify and classify rocks according to their characteristics	M	Teacher demonstration	Bell ringers Lab sheets		
Describe how igneous rocks are formed and identified using cooling rate and composition	M	Interactive media	Worksheets		
Describe how new land forms	M	Peer discussion	Teacher observation		
Describe how 3 types of sedimentary rocks are formed and identified	M	Class discussion	Submitted discussions via CANVAS		
Describe how metamorphic rocks are formed and identified	M	Kahoot	Exit tickets		
Distinguish between contact/regional and foliated/nonfoliated	M	Bell Ringers	Lab activity		
Explain how 3 types of rocks are used based on their characteristics	M	Outline/notes	Test		
Identify notable rock landforms/ features	M	Diagramming			
Research man's impact on Earth's surface as it pertains to human activities and the rock cycle	M	Critical reading			
	M	Controlled research			
	R	Lab Activity			
Describe the rock cycle	M	Current research			

Resources/Materials

Text, Rock samples, Dilute HCl, Multimedia resources, Current articles, Charts/Visuals

Interdisciplinary Relationships

Technology
 Environmental Literacy
 Math - Graphical interpretation
 Reading & Writing Lab Activities

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The student will be able to: Plate Tectonics Summarize Continental Drift	AP	Mapping Teacher demonstration	Discussion participation Kahoot	Not applicable	3.3.10. A1.
Conduct class model of Sea-Floor Spreading illustrating paleomagnetism's supporting evidence	AP	Interactive media Simulations	Homework		3.3.10. A3.
Summarize Theory of Plate Tectonics	AP	Peer discussion	Bell ringers	Not applicable	3.3.10. A4.
Utilize latitude and longitude for mapping specific points on Earth's crust	M	Class discussion	Lab sheets		3.3.10. A7.
Identify facts and location of significant tectonic events such as earthquakes and tsunamis.	AP	Kahoot Exit tickets	Worksheets Teacher observation	Not applicable	3.3.10. A7.
Interpret earthquake data bases to retrieve and track real time earthquake events	M	Bell Ringers			
Map Tectonic Plates by interpreting collected data	R	Outline/notes	Submitted discussions via CANVAS	Not applicable	
Report on several notorious case studies relating to tectonic events	AP	Diagramming Critical reading	Lab activity		
Conduct experiment modeling isostasy	AP	Controlled research	Test	Not applicable	
Conduct experiment modeling elastic rebound	AP	Lab Activity			
Describe earthquake measurement	AP	Current research		Not applicable	
Calculate the epicenter of notorious earthquakes	M	Database interpretation			
Compare scales to measure earthquakes	AP	Report		Not applicable	
Recreate faulting and mountain building	AP	Case study			
Explain magma compositions and resulting eruptions	AP	Selected video		Not applicable	
Describe 3 types of volcanoes	AP				
Resources/Materials					
Text, Lab equipment and samples, Internet resources, Current articles, Teacher created visuals					
Interdisciplinary Relationships					
Math - Graphical Analysis & Interpretation Geography - Map reading (latitude longitude) Global Awareness Environmental Literacy Productivity and Accountability Initiative and Self Direction ICT					

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The student will be able to: Weather/Atmosphere		Mapping	Discussion participation	Not applicable	3.3.10. A4.
Describe the characteristics of composition of the atmosphere	AP	Teacher demonstration	Kahoot		3.4.10. E3.
Map the atmosphere	M	Interactive media	Homework		3.2.10 A1.
Construct visual explanation of air pressure	M	Simulations	Bell ringers		3.3.10. A5.
Demonstrate ways to measure air pressure	R	Class discussion	Lab sheets		3.3.10. A6.
Categorize parts of the atmosphere according to their potential to trap heat and impact surface temperature	M	Kahoot	Worksheets		3.3.10. A7.
Establish and theorize connections between human activity and atmospheric composition changes.	R	Exit tickets	Teacher observation		
Demonstrate Coriolis Effect	M	Bell Ringers	Submitted discussions via CANVAS		
Evaluate validity of collected data	R	Outline/notes	Lab activity		
Describe energy and change in phase	AP	Diagramming	Test		
Demonstrate dew point	M	Critical reading			
Identify 4 forms of precipitation	M	Controlled research			
Identify 3 kinds of clouds	M	Lab Activity			
Explain formation of air masses	M	Current research			
Describe pressure gradients and wind creation	M	Database interpretation			
Identify local and global winds	M	Case study			
Describe the oceans impact on climate	K	Selected video			
Describe development of thunderstorms	AP				

Resources/Materials

Text, Lab equipment and samples, Internet resources, Current articles, Teacher created visuals

Interdisciplinary Relationships

Graphical analysis
 Map reading (latitude longitude)
 Global Awareness
 Environmental Literacy
 Productivity and Accountability
 Initiative and Self Direction
 ICT

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<i>The student will be able to:</i>					
Cells and Characteristics of Living Things		Class Discussion	Vocabulary Quizzes	BIO.A.1	BIO.A.1 .1.1
Describe the characteristics of life common to all prokaryotes and eukaryotes.	M	Laboratory	Quizzes	BIO.B.4	BIO.A.1 .2.1
Compare cellular structures and their functions in prokaryotic and eukaryotic cells.	M	Class Notes	Laboratory Discussion Questions		BIO.B.4 .1.1
Describe how membrane-bound organelles facilitate the transport of materials within a cell.	M	Worksheets	Worksheets		BIO.B.4 .1.2
Describe the levels of organization from organisms through the biosphere.	M	Class Demonstration	Bell Ringers		BIO.B.4 .2.1
Ecology	M	Bell Ringers	Bell Ringers		BIO.B.4 .2.2
Describe biotic and abiotic components of an ecosystem.	M	Exit Tickets	Exit Tickets		BIO.B.4 .2.3
Describe the biotic interactions in an ecosystem.	M		Test		
Describe how matter cycles through an ecosystem.	M				
Describe how energy flows through an ecosystem.	M				
Resources/Materials					
Text, Lab Equipment, Internet Resources, Microscopes, Microscope Slides, iPads, Videos					
Interdisciplinary Relationships					
Technology Applications Reading & Writing in Science Environmental Literacy Mathematical Calculations					