

Integrated Sciences 7

Curriculum Guide

Anchorage School District

Working Version
June/2006

7th Grade Integrated Science Integrated Science

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 IS 1	<p>The scientific method is a process people use to understand and predict natural phenomena.</p> <p>20 days</p>	<p><i>Science as Inquiry: Content Standard A, grades 5-8: Developing Student Abilities and Understanding</i></p> <p>As a result of activities, all student should develop</p> <ul style="list-style-type: none"> • abilities necessary to do scientific inquiry. • understandings about scientific inquiry. 	<p><i>SA</i> Students develop an understanding of the processes and applications of scientific inquiry.</p> <p><i>SA1</i> Students develop an understanding of the processes of science used to investigate problems, design and conduct repeatable scientific investigations and defend scientific arguments.</p>	<p>The student demonstrates an understanding of science by</p> <p>[7] SA1.1 asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.</p> <p>[7] SA1.2 collaborating to design and conduct simple repeatable investigation, in order to record, analyze (i.e., range, mean, median, mode), interpret data, and present findings.</p> <p>The student demonstrates an understanding that interactions with the environment provide an opportunity for understanding scientific concepts by:</p> <p>[7] SA3.1 designing and conducting a simple investigation about the local environment. (L)</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> • utilize scientific equipment properly and correctly in an appropriate and safe manner. (application) • create an experiment, using the scientific method, that identifies independent and dependent variables, and recognizes other variables to be held constant. (synthesize) • organize their data in table, graphs, and flow charts to identify the relationships among the data. (synthesize) • assess the reliability of their data. (evaluate) • generate conclusions based on their observations. (synthesize) • evaluate the benefits and limitations in the use of models (synthesis) 	<p>Product Testing Activity – Ex. Paper Towel, Antacids, Cereals, etc...</p> <p>Lab Aids: Lab-Aid No. 100 – A Scientific Method Problem Solving Kit</p> <p>Pendulum Lab (Ex. Prentice Hall – <u>Motion and Forces</u>, Try This, p. 151)</p>	<p>Students will design and carry out an experiment that follows the steps of the scientific method. Additionally, students will be able to assess the validity of the data collected.</p> <p>Science Olympiad event: Experimental Design</p> <p>Participation in school science fair or Alaska State Science and Engineering Fair.</p>	<p>Prentice Hall: <u>The Nature of Science and Technology</u> Chapter 1 – What is Science? Chapter 2 – The Work of Scientists</p> <p>Prentice Hall: <u>Product Testing Activities by Consumer Reports</u></p> <p>Prentice Hall: <u>Inquiry Skills Activity Book</u></p> <p>NSTA: <u>The Truth About Science: A Curriculum for Developing Young Scientists</u></p> <p>Activities from Tik Lim can be modified for investigation. <u>Invitations to Science Inquiry</u> ISBN: 1-878-10621-X</p>

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7 IS 2	<p>Scientific principles are demonstrated in daily life.</p> <p>Incorporate into other frameworks.</p>		<p>SF Students develop an understanding of the dynamic relationships among scientific, cultural, social, and personal perspectives.</p> <p><i>SF1</i> Students develop an understanding of the interrelationships among individuals, cultures, societies, science, and technology.</p> <p><i>SF2</i> Students develop an understanding that some individuals, cultures, and societies use other beliefs and methods in addition to scientific methods to describe and understand the world.</p> <p><i>SF3</i> Students develop an understanding of the importance of recording and validating cultural knowledge.</p>	<p>The student demonstrates an understanding of the dynamic relationships among scientific, cultural, social, and personal perspectives by:</p> <p><i>[7] SF1.1-SF3.1</i> investigating the basis of local knowledge (e.g., describing and predicting weather) and sharing that information. (L)</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References

**7th Grade Integrated Science
Life Science**

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 LS 1	<p>In classifying organisms, biologists consider details of internal and external structures to be more important than behavior or general appearance. Similarities among organisms can be used to infer the degree of relatedness among organisms. Scientists now use a seven level classification system (kingdom, phylum, class, order, family, genus, species).</p> <p>8 days</p>	<p><i>Life Science: Content Standard C; grades 5 – 8: Diversity and Adaptation</i></p> <p>Millions of species of animals, plants and microorganisms are alive today. Although different species might look dissimilar, the unity among organisms becomes apparent from an analysis of internal structures, the similarity of their chemical processes, and the evidence of common ancestry.</p>	<p><i>SC</i> Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science.</p> <p><i>SC2</i> Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.</p>	<p>The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by</p> <p>[7] <i>SC2.2</i> identifying the seven levels of classification of organisms.</p> <p>[8] <i>SC2.1</i> placing vertebrates into correct classes of taxonomy based on external, observable features.</p> <p>[9] <i>SC2.1</i> describing and comparing the characteristics of phyla/divisions from each kingdom.</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> • recommend an object's placement in either group: living or nonliving. Cite the evidence used to support the decision. (evaluation) • deduce the level of relatedness between two items based on questioning. (analyze) • create a dichotomous key classifying up to 10 objects and/or organism. (synthesize) • determine organisms placement within established keys as well as newly formed keys. (evaluate) • describe and compare the characteristics of phyla/divisions from each kingdom. (knowledge/analyze) • predict an organism's placement in a biological kingdom, given an its characteristics. (evaluation) 	<p>Create a dichotomous key for the attributes of living vs. nonliving.</p> <p>Create a dichotomous key classifying up to 10 objects and/or organisms.</p> <p>Build simple dichotomous keys based on provided pictures – fictitious or real.</p> <p>Build more advanced keys – perhaps with larger group of students still providing pictures.</p> <p>Create a chart of traits that characterize the members of the 6 kingdoms.</p> <p>Examine pond and /or aquaria water samples. Draw what is seen and categorize by kingdom.</p> <p>conduct nature inventories with classification to kingdoms</p>	<p>Have student build a key; teacher test-drives to see if it works.</p> <p>Demonstrate proficiency of using published key.</p> <p>Evaluate peers' key to validate or assess the key.</p>	<p>Prentice Hall: <u>From Bacteria to Plants</u> Chapter 1 – What is Life?</p> <p>Prentice Hall: <u>Animals</u> Chapter 1- p. 20-22</p> <p>www.phschool.com</p> <p>www.scilinks.org scn-0113 – Kingdoms</p> <p>Project Wild</p>

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7 LS 2	<p>One of the most general distinctions among organisms is between plants, which use sunlight to make their own food, and animals, which consume energy-rich foods. Some kinds of organisms, many of them microscopic, cannot be neatly classified as either plants or animals.</p> <p>5 days</p>	<p><i>Life Science Content Standard C, grades 5-8: Structure and Function in Living Systems</i></p> <p>Living organisms at all levels of organization demonstrate the complementary nature of structure and function. Important levels of organization for structure and function include cells, organs, tissues, organ systems, whole organisms, and ecosystems.</p> <p>Populations of organisms can be categorized by the function they serve in the ecosystem. Plants and some microorganisms are producers – they make their own food. All animals, including humans, are consumers, which obtain food by eating other organisms. Decomposers, primarily bacteria and fungi, are consumers that use waste materials and dead organisms for food. Food webs identify relationships among producers, consumers and decomposers in the ecosystem.</p>	<p><i>SC</i> Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science.</p> <p><i>SC2</i> Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.</p>	<p>The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by</p> <p>[7] <i>SC2.1</i> describing the basic structure and function of plant and animal cells.</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
	<p>"Living Mysteries: You be the Detective" text pg. 38 – 39</p> <p>Building Inquiry Skills: "Making Models" text pg. 33</p>	<p>Evaluate the level of accuracy for living and nonliving examples</p> <p>Group organisms into appropriate categories according to their similarities and differences using a simple classification system.</p>	<p>Prentice Hall: <u>From Bacteria to Plants</u> Chapter 1 – Living Things Chapter 3 – Protists and Fungi Chapter 4 – Introduction to Plants</p>

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ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 LS 3	<p>All living things are composed of cells, from just one to many millions, whose details usually are visible only through a microscope. Tissues are composed of cells that carry on a specific function. Organs and organ systems are composed of tissues and help to provide all cells with basic needs.</p> <p>5 days</p>	<p><i>Life Science Content Standard C, grades 5-8: Structure and Function in Living Systems</i></p> <p>Living organisms at all levels of organization demonstrate the complementary nature of structure and function. Important levels of organization for structure and function include cells, organs, tissues, organ systems, whole organisms, and ecosystems.</p> <p>All organisms are composed of cells – the fundamental unit of life. Most organisms are single cells; other organisms, including humans, are multi-cellular.</p>	<p><i>SC</i> Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science.</p> <p><i>SC2</i> Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.</p>	<p>The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by</p> <p>[7] <i>SC2.1</i> describing the basic structure and function of plant and animal cells.</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> • classify cells as plant or animal based on their characteristics. (evaluate) • determine the similarities and differences between tissues/organs in humans compared to other organisms. (evaluate) • compare and contrast the components of plant and animal cells. • identify structures e.g. cell wall, cell membrane, cytoplasm, nucleus, chloroplast. 	<p>Cell observations with a microscope (Chapter 1: Prentice Hall: <u>Cells and Heredity</u>)</p> <p>Cell Comparisons (plant/animal)</p> <p>www.cellsalive.com</p> <p>Make your classroom a cell – plastic over door is the membrane, organelles hang from ceiling. Add organelles each day.</p> <p>Cell City – as an analogy (kids can build or just discuss)</p>	<p>Have students write two lists, one summarizing the similarities between plant and animal cells, the other summarizing the differences.</p> <p>Create a poster where cell parts/functions are represented.</p> <p>Illustrate various systems of vertebrates.</p> <p>Illustrate various systems of plants.</p> <p>Build a model of a plant or animal cell.</p>	<p>Prentice Hall: <u>Cells and Heredity</u> Chapter 1 – Cell Structure and Function</p> <p>Prentice Hall: <u>From Bacteria to Plants</u> Chapter 1 – Living Things Chapter 2 – Viruses and Bacteria Chapter 3 – Protists and Fungi Chapter 4 – Introduction to Plants</p> <p>www.phschool.com</p> <p>www.scilinks.org scn-0311 – Cell Theory</p> <p>ASD VHS 207275 (Bill Nye) <u>Skin/Cells</u></p> <p>ASD VHS 807466 <u>A Journey Through the Cell: Part I: Cells: An Introduction</u></p> <p>ASD 807466 Teacher Guide (for above)</p> <p>ASD DVD 130015 <u>The Incredible Human Body</u></p>

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7 LS 4	<p>Animals and plants have a great variety of body plans and internal structures that contribute to their being able to make or find food and reproduce (asexually and/or sexually).</p> <p>5 days</p>	<p><i>Life Science Content Standard C, grades 5-8: Structure and Function in Living Systems</i></p> <p>Living organisms at all levels of organization demonstrate the complementary nature of structure and function. Important levels of organization for structure and function include cells, organs, tissues, organ systems, whole organisms, and ecosystems.</p> <p>Animals and plants have a great variety of body plans and internal structures that contribute to their being able to make or find food and reproduce.</p>	<p><i>SC</i> Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science.</p> <p><i>SC1</i> Students develop an understanding of how science explains changes in life forms over time, including genetics, heredity, and the process of natural selection. (evolution)</p> <p><i>SC2</i> Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.</p>	<p>The student demonstrates an understanding of how science explains changes in life forms over time, including genetics, heredity, and the process of natural selection by</p> <p>[7] <i>SC1.1</i> comparing and contrasting sexual and asexual reproduction.</p> <p>The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by:</p> <p>[8] <i>SC2.1</i> placing vertebrates into correct classes of taxonomy based on external, observable features.</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<p>4</p> <ul style="list-style-type: none"> recognize and assess an organism's adaptations (analyze) compare internal and external structures of a variety of organisms. (analyze) recognize examples of asexual reproduction. 	<p>Best Beaks</p> <p>Create an imaginary animal to live within a certain environment.</p> <p>Fast Plants</p>	<p>Invent a living organism (TG p. 23 Prentice Hall: <u>Animals</u>)</p> <p>Fast Plants Data Collection Journal</p>	<p>Prentice Hall: <u>From Bacteria to Plants</u> Chapter 1 – Living Things Chapter 2 – Viruses and Bacteria Chapter 3 – Protists and Fungi Chapter 4 – Introduction to Plants Chapter 5 – Seed Plants</p> <p>Prentice Hall: <u>Animals</u> Chapter 1 – Sponges, Cnidarians, and Worms Chapter 2 – Mollusks, Arthropods, and Echinoderms Chapter 3 – Fishes, Amphibians, and Reptiles Chapter 4 – Birds and Mammals</p> <p>www.phschool.com</p>

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7 LS 5	<p>Within cells, many of the basic functions of organisms, such as extracting energy from food, getting rid of wastes and reproduction are carried out.</p> <p>3 days</p>	<p><i>Life Science Content Standard C, grades 5-8; Structure and Function in Living Systems</i></p> <p>All students should develop an understanding of the structure and function in living systems.</p> <p>Living organisms at all levels of organization demonstrate the complementary nature of structure and function. Important levels of organization for structure and function include cells, organs, tissues, organ systems, whole organisms, and ecosystems.</p> <p>Cells carry on the many functions needed to sustain life. They grow and divide, thereby producing more cells. This requires that they take in nutrients, which they use to provide energy for the work that cells do and to make the materials that a cell or an organism needs.</p>	<p><i>SC</i> Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science.</p> <p><i>SC2</i> Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.</p>	<p>The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by</p> <p>[7] <i>SC2.1</i> describing the basic structure and function of plant and animal cells.</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> • Students will compare/contrast the life processes of various living organisms at the cellular/multicellular level. (analyze) • examine the functions of cell organelles and their importance to the survival of the cell. (analyze) 	<p>Organelle Analogies</p>	<p>Student will model, identify and explain parts and functions</p> <p>Student will use dialysis tubing to create their own demonstration of osmosis</p> <p>Teachers should assess students based on their work in representative activities (labs, investigations, and assignments).</p>	<p>Prentice Hall: <u>Cells and Heredity</u> Chapter 2 – Cell Process and Energy</p> <p>www.phschool.com</p> <p>www.scilinks.org scn-0322 – Cellular Respiration</p> <p>ASD VHS 807466 <u>A Journey Through the Cell: Part I: Cells: An Introduction</u></p> <p>ASD 807466 Teacher Guide (for above)</p>

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7 LS 6	<p>Human beings have body systems for obtaining and providing energy, defense, reproduction, and the coordination of body functions.</p> <p>(application in 7 PSP 9)</p> <p>20 days</p>	<p><i>Life Science Content Standard C, grades 5-8: Structure and Function of Living Systems</i></p> <p>All students should develop an understanding of the structure and function in living systems.</p> <p>The human organism has systems for digestion, respiration, circulation, excretion, movement, control, and coordination, and for protection from disease. These systems interact with one another.</p>	<p><i>SC</i> Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science.</p> <p><i>SC2</i> Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.</p>	<p>The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by</p> <p>[8] SC2.3 describing the functions and interdependence of human body systems (i.e., circulatory, respiratory, nervous).</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> • 			<p>Prentice Hall: <u>Human Biology and Health</u> Chapter 1 – Healthy Body Systems Chapter 2 – Bones, Muscles, and Skin Chapter 3 – Food and Digestion Chapter 4 – Circulation Chapter 5 – Respiration and Excretion Chapter 7 – Nervous System Chapter 8 – The Endocrine System and Reproduction</p> <p>www.phschool.com</p>

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ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 LS 7	<p>Viruses, bacteria, fungi and parasites may infect the human body and interfere with normal body functions.</p> <p>3 days</p>	<p><i>Life Science Content Standard C, grades 5-8: Structure and Function of Living Systems</i></p> <p>All students should develop an understanding of the structure and function in living systems.</p> <p>The human organism has systems for digestion, respiration, circulation, excretion, movement, control, and coordination, and for protection from disease. These systems interact with one another.</p>	<p><i>SC</i> Students develop an understanding of the concepts, models, theories, facts, evidence, systems, and processes of life science.</p> <p><i>SC2</i> Students develop an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms.</p>	<p>The student demonstrates an understanding of the structure, function, behavior, development, life cycles, and diversity of living organisms by</p> <p>[8] SC2.3 describing the functions and interdependence of human body systems (i.e., circulatory, respiratory, nervous).</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> predict the cause and effect of the infection on body systems, given a specific parasite/virus/fungus/bacteria/micro-organism. (synthesize) 	<p>Iditarod (Diphtheria Run) pg. 70</p> <p>How do infectious diseases spread? pg. 68</p> <p>Common Infection pg. 71</p> <p>“Be a Disease Detective” (Prentice Hall: <u>Bacteria to Plants</u> pg. 47)</p> <p>“Importance of Hand Washing” (Prentice Hall: <u>Bacteria to Plants</u> pg. 12-13)</p> <p>Disinfectant Lab (Food Safety Kit pg. 66-67)</p> <p>Make a wanted poster of a pathogen – assign disease-causing bacteria/virus/protists, students research and make a wanted poster with how it infects, number of deaths, description, etc.</p>	<p>“Be a Disease Detective”, (Prentice Hall - Science Explorer: <u>Bacteria to Plants</u> pg. 47)</p>	<p>Prentice Hall: <u>Human Biology and Health</u> Chapter 6 – Fighting Disease</p> <p>Prentice Hall: <u>From Bacteria to Plants</u> Chapter 2 – Viruses and Bacteria</p> <p>www.phschool.com</p> <p>www.scilinks.org scn-0123 – Infectious Disease</p> <p>ASD VHS 208407 <u>Internal Defenses</u></p>

7th Grade Integrated Science Earth Science

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 ES 1	<p>Earth turns daily on its axis. One day is defined as a complete rotation of Earth on its axis. A year is the time it takes Earth to make one complete revolution around the sun.</p> <p>1 day</p>	<p><i>Earth and Space Science Content Standard D, grades 5-8: Earth in the Solar System</i></p> <p>The earth is the third planet from the sun in a system that includes the moon, the sun, eight other planets and their moons, and smaller objects, such as asteroids and comets. The sun, an average star, is the central and largest body in the solar system.</p>	<p><i>SD</i> Students develop an understanding of the concepts, processes, theories, models, evidence, and systems of earth and space sciences.</p> <p><i>SD3</i> Students develop an understanding of the cyclical changes controlled by energy from the sun and by Earth's position and motion in our solar system.</p>	<p>The student demonstrates an understanding of the theories regarding the origin and evolution of the universe by:</p> <p>[5] <i>SD4.2</i> recognizing that the Earth is in regular and predictable motion and this motion explains the length of a day and year.</p> <p>The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by</p> <p>[8] <i>SD3.1</i> recognizing the relationship between the seasons and Earth's tilt relative to the sun and describing the day/night cycle as caused by the rotation of the Earth every 24 hours.</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> • determine the impact of the earth's tilt and revolution on days, nights. (evaluate) • create a model that illustrates the motions and positions of the Earth relative to the sun. (synthesis) 			<p>Prentice Hall: <u>Astronomy</u> Chapter 1 – Sun, Earth and Moon</p> <p>www.phschool.com</p> <p>www.globalsuntemp.com (classroom – record temps, sunrise, etc.</p>

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ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 ES 2	<p>The Earth's axis is tilted relative to the plane of the orbit around the sun, causing the seasons.</p> <p>1 day</p>	<p><i>Earth and Space Science Content Standard D, grades 5-8: Earth in the Solar System</i></p> <p>The earth is the third planet from the sun in a system that includes the moon, the sun, eight other planets and their moons, and smaller objects, such as asteroids and comets. The sun, an average star, is the central and largest body in the solar system.</p>	<p><i>SD</i> Students develop an understanding of the concepts, processes, theories, models, evidence, and systems of earth and space sciences.</p> <p><i>SD3</i> Students develop an understanding of the cyclical changes controlled by energy from the sun and by Earth's position and motion in our solar system.</p>	<p>The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by</p> <p><i>[8]SD3.1</i> recognizing the relationship between the seasons and Earth's tilt relative to the sun and describing the day/night cycle as caused by the rotation of the Earth every 24 hours.</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> • determine the impact of the earth's tilt and revolution on the seasons. (evaluate) • create a model that illustrates the motions and positions of the Earth relative to the sun. (synthesis) 	Prentice Hall: <u>Astronomy</u> p. 22 "Reasons for the Seasons"	Have students describe the seasons at your latitude relative to the position of the earth's tilt to the sun. Describe why spring and fall often have similar conditions.	Prentice Hall: <u>Astronomy</u> Chapter 1 – Sun, Earth and Moon www.phschool.com www.globalsuntemp.com (classroom – record temps, sunrise, etc. ASD VHS 207276 (Bill Nye) <u>Earth's Seasons/Climates</u>

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7 ES 3	<p>The moon orbits around the earth once in about 28 days, which changes how much of the lighted portion can be seen from the earth. This process is called the “phases of the moon.”</p> <p>4 days</p>	<p><i>Earth & Space Science Content Standard D; grades 5-8; Earth in the Solar System</i></p> <p>Most objects in the solar system are in regular and predictable notion. Those notions explain such phenomena as the day, the year, phases of the moon and eclipses.</p>	<p><i>SD</i> Students develop an understanding of the concepts, processes, theories, models, evidence, and systems of earth and space sciences.</p> <p><i>SD3</i> Students develop an understanding of the cyclical changes controlled by energy from the sun and by Earth’s position and motion in our solar system.</p>	<p>The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth’s position and motion in our solar system by</p> <p><i>[5] SD3.1</i> observing a model that shows how the regular and predictable motion of the Earth and moon determine the apparent shape (phases) of the moon over time. (L)</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> • produce a model to demonstrate the phases of the moon. (synthesize) • identify different phases of the moon. (knowledge) • visualize position of Earth, sun & moon system. Predict which phase will be at given location. (analyze) 	<p>Flash light & small sphere lab demonstrating the phases of the moon.</p> <p>Moon Log – record lunar phases</p> <p>Using internet models/data draw the sun/moon system on a given day at your location. Verify your accuracy with direct lunar observation.</p> <p>:If There Were No Moon” Discovery Films</p>	<p>Presentation/demonstration of the models the students produce.</p>	<p>Prentice Hall: <u>Astronomy</u> Chapter 1 – Sun, Earth and Moon</p> <p>www.phschool.com</p> <p>www.scilinks.org scn-0614 – Earth’s Moon</p> <p>www.education.nasa.gov</p> <p>ASD VHS 207277 (Bill Nye) <u>The Moon/Outer Space</u></p>

7th Grade Integrated Science Earth Science

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 ES 4	<p>Water evaporates from the surface of the earth, rises and cools, and then condenses into rain or snow. The water falling on land collects in rivers and lakes, soil, and porous layers of rock, and much of it flows back into the ocean. This cycle is driven by solar energy.</p> <p>2 days</p>	<p><i>Earth and Space Science Content Standard D, grades 5-8: Structure of the Earth System</i></p> <p>Water, which covers the majority of the earth's surface, circulates through the earth's crust, oceans, and atmosphere in what is known as the " water cycle." Water evaporates from the earth's surface, rises and cools as it moves to higher elevations, condenses as rain or snow, and falls to the surface where it collects in lakes.</p> <p>Water is a solvent. As it passes through the water cycle it dissolves minerals and gases and carries them to the oceans.</p> <p>Clouds formed by the condensation of water vapor, affect weather and climate.</p> <p>Global patterns of atmospheric movement influence local weather. Oceans have a major effect on climate, because water in the ocean holds a large amount of heat.</p>	<p><i>SD</i> Students develop an understanding of the concepts, processes, theories, models, evidence, and systems of earth and space sciences.</p> <p><i>SD1</i> Students develop an understanding of Earth's geochemical cycles.</p> <p><i>SD3</i> Students develop an understanding of the cyclical changes controlled by energy from the sun and by Earth's position and motion in our solar system.</p>	<p>The student demonstrates an understanding of geochemical cycles by:</p> <p>[7] <i>SD1.2</i> explaining the water cycle's connection to changes in the Earth's surface.</p> <p>The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by</p> <p>[7] <i>SD 3.2</i> recognizing the relationship between phase changes (i.e., sublimation, condensation, evaporation) and energy transfer.</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> • compare and contrast the water cycle in different environments. (analyze) • predict changes in the water cycle based on seasonal temperature changes. (apply) 	<p>Personification paper of a water molecule journey through the water cycle.</p> <p>Prentice Hall: <u>Earth's Waters</u> pg. 34-36 Demonstrate the water cycle using the Table Top Water Cycle Activity.</p> <p>Prentice Hall: <u>Earth's Waters</u> pg. 15 - "Every Drop Counts"</p> <p>Prentice Hall: <u>Earth's Water</u> pg. 70 - "Soil Testing"</p> <p>Create a collage depicting the water cycle.</p>		<p>Prentice Hall: <u>Earth's Waters</u> Chapter 1 – Earth: The Water Planet Chapter 2 – Fresh Water</p> <p>www.phschool.com</p>

7th Grade Integrated Science Earth Science

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 ES 5	<p>Earth's weather cycles are influenced by: energy from the sun, the transfer by convection, conduction, and/or radiation of solar energy within the Earth's systems, the Earth's position and motion in our solar system, and land features. Weather is described using meteorological terms.</p> <p>10 days</p>	<p><i>Earth and Space Science Content Standard D, grades 5-8, Structure of the Earth System</i></p> <p>Water, which covers the majority of the earth's surface, circulates through the crust, oceans, and atmosphere in what is known as the "water cycle." Water evaporates from the earth's surface, rises, and cools as it moves to higher elevations, condenses as rain or snow, and falls to the surface where it collects in lakes, oceans, soil, and in rocks underground.</p> <p>The atmosphere is a mixture of nitrogen, oxygen and trace gases that include water vapor. The atmosphere has different properties at different elevations.</p> <p>Global patterns of atmospheric movement influence local weather.</p>	<p><i>SD</i> Students develop an understanding of the concepts, processes, theories, models, evidence, and systems of earth and space sciences.</p> <p><i>SD3</i> Students develop an understanding of the cyclical changes controlled by energy from the sun and by Earth's position and motion in our solar system.</p>	<p>The student demonstrated an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by</p> <p><i>[7] SD3.2</i> describing the weather using accepted meteorological terms (e.g., pressure systems, fronts, precipitation.)</p> <p><i>[8] SD 3.2</i> recognizing types of energy transfer (convection, radiation, conduction) and how they affect weather.</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
			<p>Prentice Hall: <u>Weather and Climate</u> Chapter 1 – The Atmosphere Chapter 2 – Weather Factors Chapter 3 – Weather Patterns</p>

7th Grade Integrated Science Earth Science

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 ES 6	<p>All rocks originate from the earth's magma and are composed of minerals. The rock cycle describes the relationship to igneous, sedimentary and metamorphic rocks.</p> <p>3 days</p>	<p><i>Earth and Space Science Content Standard D, grades 5-8: Structure of the Earth System / Earth's History</i></p> <p>Soil consists of weathered rocks and decomposed organic material from dead plants, animals, and bacteria.</p> <p>The earth processes we see today, including erosion, movement of lithospheric plates, and changes in atmospheric composition, are similar to those that occurred in the past. Earth history is also influenced by occasional catastrophes, such as the impact of an asteroid or comet.</p>	<p><i>SD</i> Students develop an understanding of the concepts, processes, theories, models, evidence, and systems of earth and space sciences.</p> <p><i>SD1</i> Students develop an understanding of Earth's geochemical cycles.</p>	<p>The student demonstrates an understanding of geochemical cycles by</p> <p><i>[7] SD1.1</i> describing the rock cycle and its relationship to igneous, metamorphic, and sedimentary rocks.</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> • investigate how sedimentary rocks form. (analyze) • classify the different forms of rocks. (evaluate) 	<p>Prentice Hall: <u>Inside Earth</u> pg. 155 TE “Making Models using Plaster of Paris”</p> <p>Investigate the different uses of sedimentary rock in society.</p>	<p>Group sedimentary rocks into appropriate categories according to their similarities and differences using a simple classification system.</p> <p>Prentice Hall: <u>Inside Earth</u> – pg. 155 Ongoing Assessment</p>	<p>Prentice Hall: <u>Inside Earth</u> Chapter 4 – Minerals Chapter 5 – Rocks</p> <p>www.phschool.com</p> <p>www.scilinks.org scn-1053 – Sedimentary Rocks scn-1055 – Metamorphic Rocks scn-1052 – Igneous Rocks</p>

7th Grade Integrated Science Physical Science - Chemistry

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 PSC 1	<p>All matter is made up of atoms that are composed of protons, neutrons, and electrons. The Periodic Table is a tool that organizes the elements.</p> <p>7 days</p>	<p><i>Physical Science Content Standard B, grades 5-8: Properties and Changes of Properties of Matter</i></p> <p>Substances react chemically in characteristic ways with other substances to different characteristic properties. In chemical reactions, the total mass is conserved. Substances often are placed in categories or groups if they react in similar ways; metals are an example of such a group.</p> <p>Chemical elements do not break down during normal laboratory reactions involving such treatments as heating, exposure to electric current, or reaction with acids. There are more than 100 known elements that combine in a multitude of ways to produce compounds, which account for the living and nonliving substances that we encounter.</p>	<p><i>SB</i> Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p> <p><i>SB1</i> Students develop an understanding of the characteristic properties of matter and the relationship of these properties to their structure and behavior.</p>	<p>The student demonstrates understanding of the structure and properties of matter by:</p> <p><i>[9] SB1.1</i> describing atoms and their base components (i.e., protons, neutrons, electrons).</p> <p><i>[10] SB1.1</i> using the periodic table to describe atoms in terms of their base components (i.e., protons, neutrons, electrons).</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> • create a model of an atom (Bohr – see activities) that shows the main structures of an atom (protons, neutrons, and electrons). (synthesis) 	<p>“Create an Element” project</p>	<p>Create a Bohr model for a given element.</p>	<p>Prentice Hall: <u>Chemical Building Blocks</u> Chapter 1 – An Introduction to Matter</p> <p>Prentice Hall: <u>Chemical Interactions</u> Chapter 1 – Chemical Reactions Chapter 2 – Atoms and Bonding</p> <p>www.phschool.com</p> <p>www.scilinks.org scn-1111 – Describing Matter</p> <p>ASD VHS 207295 (Bill Nye) <u>Atoms/Motion</u></p> <p>ASD VHS 205947 <u>Atoms</u></p>

7th Grade Integrated Science Physical Science - Chemistry

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 PSC 2	<p>On Earth, matter can occur in nature in three phases; solids, liquids, and gases. The phase of matter is determined by the energy and motion of the atoms of the material.</p> <p>3 days</p>	<p><i>Physical Science Content Standard B grades 9 - 12: Structure and Properties of Matter</i></p> <p><i>Solids, liquids and gases differ in the distances and angles between molecules or atoms and therefore the energy that binds them together. In solids the structure is nearly rigid; in liquids molecules or atoms move around each other but do not move apart; and in gases molecules or atoms move almost independently of each other and are mostly far apart.</i></p>	<p><i>SB</i> Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p> <p><i>SB3</i> Students develop an understanding of the interactions between matter and energy, including physical, chemical, and nuclear changes, and the effects of these interactions on physical systems.</p>	<p>The student demonstrates an understanding of how energy can be transformed, transferred, and conserved by</p> <p><i>[7] SB3.1</i> recognizing that most substances can exist as a solid, liquid, or gas depending on the motion of its particles.</p> <p><i>[8] SB3.1</i> exploring changes of state with increase or decrease of particle speed associated with heat transfer. (L).</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> design a lab that demonstrates the effect of heating on various objects. (synthesis) create similes to illustrate different states of matter. (Additionally – analogies) (synthesis) 	<p>Prentice Hall: <u>Chemical Building Blocks</u>, Chapter 2 Section 1-2</p> <p>Make the water cycle – create a small still</p> <p>Make a hot air balloon (Pitsco has “REAL” launchers)</p> <p>Students model molecular motion. Setting – 2m sq. area – marked with dry erase marker on linoleum floor. SOLID – Slow music – students link arms and move slightly. LIQUID – Little faster music – release arms, move faster & stay in square GAS – Fast music – increase speed of motion, WHEN TEACHER DIRECTS – Students fly out of the square.</p> <p><u>Science Plus Green</u> - Chapter 4 ZED (Solids Liquids & Gases)</p> <p>GEMS – <u>Oobleck</u></p>	<p>Classify states of matter – assessment Prentice Hall: <u>Chemical Building Blocks</u> Chapter 2 p 45.</p> <p>Create a skit or cartoon Prentice Hall: <u>Chemical Building Blocks</u> Chapter 2 Project p 43</p>	<p>Prentice Hall: <u>Chemical Building Blocks</u> Chapter 2 – Changes in Matter</p> <p>www.phschool.com</p> <p>www.scilinks.org scn-1114 – Matter & Energy scn-1124 - Gases</p> <p><u>SciencePlus Green</u></p>

7th Grade Integrated Science Physical Science - Chemistry

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 PSC 3	<p>Characteristic properties for a give substance never change and therefore can be used to identify matter. Examples of properties are boiling point, melting point, density, and conductivity.</p> <p>4 days</p>	<p><i>Physical Science Content Standard B grades 5-8: Properties and Changes of Properties of Matter</i></p> <p>A substance has characteristic properties, such as density, boiling point, and solubility, all of which are independent of the amount of the sample. A mixture of substances often can be separated into the original substances using one or more of the characteristic properties.</p>	<p><i>SB</i> Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p> <p><i>SB1</i> Students develop an understanding of the characteristic properties of matter and the relationship of these properties to their structure and behavior.</p>	<p>The student demonstrates understanding of the structure and properties of matter by:</p> <p><i>[7] SB1.1</i> using physical properties (i.e., density, boiling point, freezing point, conductivity) to differentiate among and/or separate materials (i.e., elements, compounds, and mixtures).</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> determine the physical properties in a collection of various materials. (knowledge) 	<p>Prentice Hall - <u>Science Explorer: Motion Force and Energy</u> p 95 Column of liquids of varied densities. Find the density of 1 solid and 1 liquid and then relate in terms of other solids / liquids.</p> <p>Prentice Hall - <u>Science Explorer: Chemical Building Blocks</u> Chapter 1 section 1 varied activities</p> <p>Prentice Hall - <u>Science Explorer: Chemical Building Blocks</u> Chapter 2 p 70 Melting Ice activity</p> <p><u>Science Plus Green</u> - Paraffin Lab</p> <p>Copper sheeting / wire for ductility and malleability</p> <p>Separating a Mixtures Lab</p>	<p>Given a column of various liquids students will be able to predict where a given object will float.</p> <p>Prentice Hall - <u>Science Explorer: Chemical Building Blocks</u> Chapter 1 Project pg. 13</p>	<p>Prentice Hall: <u>Chemical Building Blocks</u> Chapter 1 – An Introduction to Matter Chapter 2 – Changes in Matter</p> <p>Prentice Hall: <u>Chemical Interactions</u> Chapter 1 – Chemical Reactions</p> <p>www.phschool.com</p> <p>www.scilinks.org scn-1111 – Describing Matter</p>

7th Grade Integrated Science Physical Science - Chemistry

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 PSC 4	<p>Equal volumes of different substances usually have different mass.</p> <p>5 days</p>	<p><i>Physical Science Content Standard B; grades 5-8; Properties and Changes of Properties in Matter</i></p> <p>A substance has characteristic properties, such as density, a boiling point and solubility. All of which are independent of the amount of the sample. A mixture of substances often can be separated into the original substances using one or more of the characteristic properties.</p>	<p><i>SB</i> Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p> <p><i>SB1</i> Students develop an understanding of the characteristic properties of matter and the relationship of these properties to their structure and behavior.</p>	<p>The student demonstrates understanding of the structure and properties of matter by</p> <p>[7] <i>SB1.1</i> using physical properties (i.e., density, boiling point, freezing point, conductivity) to differentiate among and/or separate materials (i.e., elements, compounds, and mixtures).</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> • calculate the density of various substances. (comprehend) • explain the relationship between density & the layering of fluids. (synthesis) • compare the measurement of mass of different substances with the same volume. (analyze) 	<p>Demonstration: Diet Pepsi/ Pepsi Demo</p>	<p>Given an object, determine its density.</p>	<p>Prentice Hall: <u>Chemical Building Blocks</u> Chapter 1 – An Introduction to Matter</p> <p>Prentice Hall: <u>Motion, Forces, and Energy</u> Chapter 3 – Forces in Fluids</p> <p>www.phschool.com</p> <p>ASD CD 110082 <u>It's Chemical: Density in Solids</u></p>

7th Grade Integrated Science Physical Science - Chemistry

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 PSC 5	<p>Physical changes alter the form of a substance, not its chemical makeup. It may be a change in shape or size or change in phase.</p> <p>3 days</p>	<p><i>Physical Science Content Standard B grades 5-8. Properties and Changes of Properties of Matter</i></p> <p>A substance has characteristic properties, such as density, boiling point, and solubility, all of which are independent of the amount of the sample. A mixture of substances often can be separated into the original substances using one or more of the characteristic properties.</p> <p>Chemical elements so not break down during normal laboratory reactions involving such treatments as heating, exposure to electric current, or reaction with acids. There are more than 100 known elements that combine in a multitude of ways to produce compounds, which account for the living and nonliving substances that we encounter.</p>	<p><i>SB</i> Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p> <p><i>SB1</i> Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p>	<p>The student demonstrates understanding of the structure and properties by</p> <p>[7] <i>SB1.1</i> using physical properties (i.e. density, boiling point, freezing point, conductivity) to differentiate among and/or separate materials (i.e., elements, compounds and mixtures).</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> • identify several examples of physical changes. (evaluate) • produce a poster explaining types of physical changes. (synthesis) 	<p>Prentice Hall: <u>Chemical Building Blocks</u> – Ch. 2 Sec. 4</p> <p><u>SciencePlus Green</u> – Stations Lab Ch 5</p> <p>Science Olympiad Elementary – <u>GUNK, GAK</u></p> <p>GEMS – <u>Bubbology</u></p> <p>Ice cream Labs – (Example: ice cream in a bag)</p> <p>No bake fudge</p>		<p>Prentice Hall: <u>Chemical Building Blocks</u> Chapter 1 – An Introduction to Matter Chapter 2 – Changes in Matter</p> <p>Prentice Hall: <u>Chemical Interactions</u> Chapter 1 – Chemical Reactions</p> <p>www.phschool.com</p> <p><u>SciencePlus Green</u></p> <p>GEMS – <u>Bubbology</u></p> <p>ASD CD 11090 <u>It's Chemical: Physical Changes</u></p>

7th Grade Integrated Science Physical Science - Physics

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 PSP 1	<p>Newton's Laws of Motion describe the relationships among force, mass and acceleration. Acceleration is the rate of change in speed, direction of motion, or both.</p> <p>8 days</p>	<p><i>Physical Science Content Standard B grades 5-8: Motion and Forces,</i></p> <p>The motion of an object can be described by its position, direction of motion, and speed. That motion can be measured and represented on a graph.</p> <p>An object that is not being subjected to a force will continue to move at a constant speed and in a straight line.</p> <p>If more than one force acts on an object along a straight line, then the forces will reinforce or cancel one another, depending on their direction and magnitude. Unbalanced forces will cause changes in the speed or direction of an object's motion</p>	<p><i>SB</i> Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p> <p><i>SB4</i> Students develop an understanding of motions, forces, their characteristics and relationships, and natural forces and their effects.</p>	<p>The student demonstrates an understanding of motions, forces, their characteristics, relationships, and effects by</p> <p>[7] <i>SB4.1</i> illustrating that unbalanced forces will cause an object to accelerate.</p> <p>[8] <i>SB4.1</i> demonstrating (L) and explaining circular motion.</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
			<p>Prentice Hall: <u>Motion, Forces, and Energy</u> Chapter 1 – Motion Chapter 2 – Forces</p> <p>ASD VHS 207295 (Bill Nye) <u>Atoms/Motion</u></p>

7th Grade Integrated Science Physical Science - Physics

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 PSP 2	<p>The gravitational pull on an object is the object's weight. Gravitational forces are dependent upon a variety of factors.</p> <p>1 day</p>	<p><i>Physical Science Content Standard B grade 9-12: Motion and Forces</i></p> <p>Gravitation is a universal force that each mass exerts on any other mass. The strength of the gravitational attractive force between two masses is proportional to the masses and inversely proportional to the square of the distance between them.</p>	<p><i>SB</i> Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p> <p><i>SB4</i> Students develop an understanding of motions, forces, their characteristics and relationships, and natural forces and their effects.</p>	<p>The student demonstrates an understanding of motions, forces, their characteristics, relationships, and effects by</p> <p>[7] <i>SB4.1</i> illustrating that unbalanced forces will cause an object to accelerate.</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
			<p>Prentice Hall: <u>Motion, Forces, and Energy</u> Chapter 1 – Forces Chapter 2 – Motion</p> <p>ASD VHS 207605 <u>Gravity is Attractive: What is Gravity?</u></p> <p>ASD VHS 206518 (Bill Nye) <u>Momentum/Gravity</u></p>

7th Grade Integrated Science Physical Science - Physics

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 PSP 3	<p>Energy is the ability to do work or to cause change. It occurs in different forms such as heat, chemical, mechanical, electrical, and light.</p> <p>2 days</p>	<p><i>Physical Science Content Standard B grades 5-8: Transfer of Energy</i></p> <p>Energy is a property of many substances and is associated with heat, light, electricity, mechanical motion, sound, nuclei, and the nature of a chemical. Energy is transferred in many ways.</p>	<p><i>SB</i> Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p> <p><i>SB2</i> Students develop an understanding that energy appears in different forms, can be transformed from one form to another, can be transferred or moved from one place or system to another, may be unavailable for use, and is ultimately conserved.</p>	<p>The student demonstrates an understanding of how energy can be transformed, transferred, and conserved by</p> <p><i>[6] SB2.1</i> recognizing that energy can exist in many forms (i.e., heat, light, chemical, electrical, mechanical).</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> determine the correct form of energy, e.g. heat, chemical, electrical, mechanical, and light; given a variety of real life examples of energy. (evaluate) 	<p>Set-up six stations with items that represent all different forms of energy, and then students classify each.</p> <p>Prentice Hall: <u>Motion, Forces, and Energy</u>, Chapter 5, pg. 140 – 145</p>	<p>Research Project of forms of energy.</p> <p>Develop a poster and a presentation on an energy source. (random selection) Include for example – 3 web sites / 2 books / 2 drawings / environmental ramifications / other pros and cons</p> <p>Evaluate the level of accuracy of the project.</p>	<p>Prentice Hall: <u>Motion, Forces, and Energy</u> Chapter 4 – Work and Machines Chapter 5 – Energy and Power</p> <p>Prentice Hall <u>Chemical Building Blocks</u> Chapter 2 – Changes in Matter</p> <p>www.phschool.com</p> <p>www.scilinks.org scn-1352 – Forms of Energy</p> <p>ASD VHS 206516 (Bill Nye) <u>Heat/Energy</u></p>

7th Grade Integrated Science Physical Science - Physics

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 PSP 4	<p>Energy can change from one form to another.</p> <p>3 days</p>	<p><i>Physical Science Content Standard B grades 5-8: Transfer of Energy</i></p> <p>Energy is a property of many substances and is associated with heat, light, electricity, mechanical motion, sound, nuclei, and the nature of a chemical. Energy is transferred in many ways.</p> <p>In most chemical and nuclear reactions, energy is transferred into or out of a system. Heat, light, mechanical motion, or electricity might all be involved in such transfers.</p>	<p><i>SB</i> Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p> <p><i>SB2</i> Students develop an understanding that energy appears in different forms, can be transformed from one form to another, can be transferred or moved from one place or system to another, may be unavailable for use, and is ultimately conserved.</p>	<p>The student demonstrates an understanding of how energy can be transformed, transferred, and conserved by</p> <p><i>[7] SB2.1</i> explaining that energy (i.e., heat, light, chemical, electrical, mechanical) can change form.</p> <p><i>[8] SB2.1</i> identifying the initial source and resulting change in forms of energy in common phenomena (e.g., sun to tree to wood to stove to cabin heat).</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> determine the starting and ending forms of energy given an energy transfer situation. (evaluate) 	<p><u>Science Plus Green</u> - Hero's Engine Bunsen Burner Heating</p> <p>Pg. 149 TG Prentice Hall: <u>Motions Forces, and Energy</u> – Conversion of Energy Lab</p> <p>Steam Engine (Boreal Catalog ~ \$235.00)</p> <p>Create a Rube Goldberg device that demonstrates at least three different energy transfers.</p>	<p>Create a flow chart tracing the path of energy to their household appliances. (student selects energy type)</p> <p>Design a Rube Goldberg device that demonstrates at least three different energy transfers.</p> <p>pg. 157 Prentice Hall: <u>Motion, Forces, And Energy</u> - Performance Assessment</p>	<p>Prentice Hall: <u>Motion, Forces, and Energy</u> Chapter 5 – Energy and Power</p> <p>www.phschool.com</p> <p>www.scilinks.org scn-1354 – Energy Transformations</p> <p><u>SciencePlus</u> Green</p>

7th Grade Integrated Science Physical Science - Physics

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 PSP 5	<p>Energy can be neither created nor destroyed.</p> <p>1 day</p>	<p><i>Physical Science Content Standard B grades 5-8: Properties and Changes of Properties of Matter / Transfer of Energy</i></p> <p>Substances react chemically in characteristic ways with other substances to form new substances (compounds) with different characteristic properties. In chemical reactions, the total mass is conserved. Substances often are placed in categories or groups if they react in similar ways; Metals is an example of such a group.</p> <p>In most chemical and nuclear reactions, energy is transferred into or out of a system. Heat, light, mechanical motion, or electricity might all be involved in such transfers.</p>	<p><i>SB</i> Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p> <p><i>SB2</i> Students develop an understanding that energy appears in different forms, can be transformed from one form to another, can be transferred or moved from one place or system to another, may be unavailable for use, and is ultimately conserved.</p>	

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> deduce that energy is transferred, not destroyed, given a system of energy transfer (analyze) 	SEPUP – “Shake the Shot” (Science and Sustainability) (Shake 100g of Cu shot in a closed container. First cool the Cu in cold water, place temperature in lid, shake, measure increase in temperature.)	Students create their own system of energy changes that show energy transformations. Evaluate the level of accuracy	Prentice Hall: <u>Motion, Forces, and Energy</u> Chapter 5 – Energy and Power Prentice Hall: <u>Chemical Building Blocks</u> Chapter 2 - Changes in Matter www.phschool.com www.scilinks.org scn-1331 - Energy

7th Grade Integrated Science Physical Science - Physics

ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 PSP 6	<p>Energy that is stored is called potential energy (e.g. position, chemical). Energy that is in motion is called kinetic energy.</p> <p>2 days</p>	<p><i>Physical Science Content Standard B grades 5-8: Transfer of Energy</i></p> <p>Energy is a property of many substances and is associated with heat, light, electricity, mechanical motion, sound, nuclei, and the nature of a chemical. Energy is transferred in many ways.</p>	<p><i>SB</i> Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p> <p><i>SB2</i> Students develop an understanding that energy appears in different forms, can be transformed from one form to another, can be transferred or moved from one place or system to another, may be unavailable for use, and is ultimately conserved.</p>	

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> separate a set of written scenarios into two categories: "potential" or "kinetic". (analyze) 	<p>Prentice Hall: <u>Motion, Forces, and Energy</u> Chapter 5, pg. 146 Soaring Straws</p> <p>Paper Cup Catapult – "Storm the Castle " from <u>SPACES</u> (see References)</p> <p>Roller Coasters – INTERACT unit minimum of two loops and an airborne section.</p> <p>SPLAT – uses butcher paper, meter stick, eyedroppers of paint - measure drop diameters vs the height of drop. - use a hand lens for close observation.</p>	<p>Given a set amount of materials, teams need to create a device that keeps the marble rolling the longest period of time.</p> <p>After a 45-minute testing period, you have 10 minutes to calibrate your dropping device to create a "SPLAT" within a set diameter. You get 1 shot.</p>	<p>Prentice Hall: <u>Motion, Forces, and Energy</u> Chapter 5 – Energy and Power</p> <p>www.phschool.com</p> <p>www.scilinks.org scn-1352 – Forms of Energy</p> <p><u>SPACES</u> by Dale Seymour</p> <p>ASD VHS 205939 <u>Energy</u></p>

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7 PSP 7	<p>Waves transfer some kinds of energy from one place to another. All waves have specific characteristics. Vibration in materials set up wave-like disturbances that spread away from the source.</p> <p>1 day</p>	<p><i>Physical Science Content Standard B grades 5-8: Transfer of Energy</i></p> <p>The sun is a major source of energy for changes on the earth's surface. The sun loses energy by emitting light. A tiny fraction of that light reaches the earth, transferring energy from the sun to the earth. The sun's energy arrives as light with a range of wavelengths, consisting of visible light, infrared, and ultraviolet radiation.</p>	<p><i>SB</i> Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p> <p><i>SB4</i> Students develop an understanding of motions, forces, their characteristics and relationships, and natural forces and their effects.</p>	<p>The student demonstrates an understanding of motions, forces, their characteristics, relationships, and effects by:</p> <p>[7] <i>SB4.3</i> describing the characteristics of a wave (i.e., amplitude, wavelength, and frequency).</p>

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> generate transverse and longitudinal waves. (synthesis) <p>ADD MORE</p>	<p>Prentice Hall: <u>Sound and Light</u> Chapter 1 Section 1 pg. 14 Wave Tank Observation</p> <p>Prentice Hall: <u>Sound and Light</u> Chapter 1 Section 1 pg. 16 Demonstration wave properties</p>		<p>Prentice Hall: <u>Sound and Light</u> Chapter 1 – Characteristics of Waves</p> <p>www.phschool.com</p> <p>www.scilinks.org scn-1511 – Waves scn -1531 – Nature of Waves</p> <p>ASD 206525 (Bill Nye) <u>Waves/Wind</u></p>

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7 PSP 8	<p>Energy from the sun is made up of a mixture of many different colors of light even though to the human eye the light looks almost white. Non-luminous objects appear to be different colors, depending upon which wavelengths are absorbed or reflected.</p> <p>5 days</p>	<p><i>Physical Science Content Standard B grades 5-8: Transfer of Energy</i></p> <p>The sun is a major source of energy for changes on the earth's surface. The sun loses energy by emitting light. A tiny fraction of that light reaches the earth, transferring energy from the sun to the earth. The sun's energy arrives as light with a range of wavelengths, consisting of visible light, infrared, and ultraviolet radiation.</p>	<p><i>SB</i></p> <p>Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p>	

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> decide which colors are absorbed or reflected when given a variety of colored objects. 	<p>Prentice Hall - <u>Science Explorer: Sound and Light</u> Chapter 4 Section 3 p.128</p> <p>"Sunset in a Beaker", <u>Invitations to Science Inquiry</u>, Tik Liem – Groups of 4/ beaker of water / add drops of milk – look at from all angles and describe.</p> <p>Colored filters shining on objects. (colored cellophane on flashlights)</p> <p>A pinwheel made of rainbow-colored fabric strips spins in front of an electric fan. The mixing colors blend into white light. (Educational Innovations)</p>	<p>Students hold different colored paper while seated on a darkened (DARK) room / stage. Use filtered flashlight to shine on different colors of paper and have students figure out the real colors of paper based on what color the filter is.</p>	<p>Prentice Hall: <u>Sound and Light</u> Chapter 3 – The Electromagnetic Spectrum Chapter 4 - Light</p> <p>www.phschool.com</p> <p>www.scilinks.org scn-1543 – Color</p> <p>ASD VHS 207273 (Bill Nye) <u>Sound/Light & Color</u></p> <p>ASD VHS 205960 <u>Light Waves</u></p> <p>ASD VHS 207342 (Eyewitness) <u>Color & Light</u></p>

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ASD Science Curriculum Code	ASD Framework and Pacing Guide	National Science Standard	Alaska State Science Content Standard	Grade Level Expectations
7 PSP 9	<p>Something can be “seen” when light waves emitted or reflected enter the eye; just as something can be “heard” when sound waves enter the ear.</p> <p>(application for 7LS 6)</p> <p>5 days</p>	<p><i>Physical Science Content Standard B grades 5-8; Transfer of Energy</i></p> <p>Light interacts with matter by transmission (including refraction), absorption, or scattering (including reflection). To see an object, light from that object-emitted by or scattered from it-must enter the eye.</p>	<p><i>SB</i></p> <p>Students develop an understanding of the concepts, models, theories, universal principles, and facts that explain the physical world.</p>	

Objectives (Bloom's) – Students will be able to:	Representative Activities	Assessments/Evaluations	References
<ul style="list-style-type: none"> • • 	<p>Prentice Hall - <u>Science Explorer: Sound and Light</u> Chapter 2 Section 1 pg. 40 - 44 Basic Sound Concepts</p> <p>Hanger Gonger – Make an open U out of a wire coat hanger. Tie a one-meter piece of string to the ends of the U and hang the string across the top of your head, so when you poke your fingers in your ears the string goes in your ears. When you bend over and bang the hanger into objects you get gonged!</p> <p>Hold a 6” –8” piece of dowel (Popsicle stick) in between your teeth. Touch the end of the stick with a vibrating tuning fork. You can feel the sound-producing vibrations in your head.</p>	<p>Create an instrument. Science Olympiad – Sound of Music</p> <p>Students create a pathway of light using mirrors and a flashlight. Illustrate the pathway.</p>	<p>Prentice Hall: <u>Human Biology and Health</u> Chapter 7 – The Nervous System</p> <p>Prentice Hall: <u>Sound and Light</u> Chapter 2 - Sound</p> <p>www.phschool.com</p> <p>Science Olympiad 2000 – “Sound of Music” activity</p> <p>ASD VHS 207273 (Bill Nye) <u>Sound/Light & Color</u></p> <p>ASD VHS 206887 (Eyewitness) <u>Sight</u></p>