

Republic of the Philippines  
Department of Education  
DepEd Complex, Meralco Avenue  
Pasig City

# **K to 12 Curriculum Guide**

# **SCIENCE**

**(Grades 3 to 10)**

January 31, 2012

## CONCEPTUAL FRAMEWORK

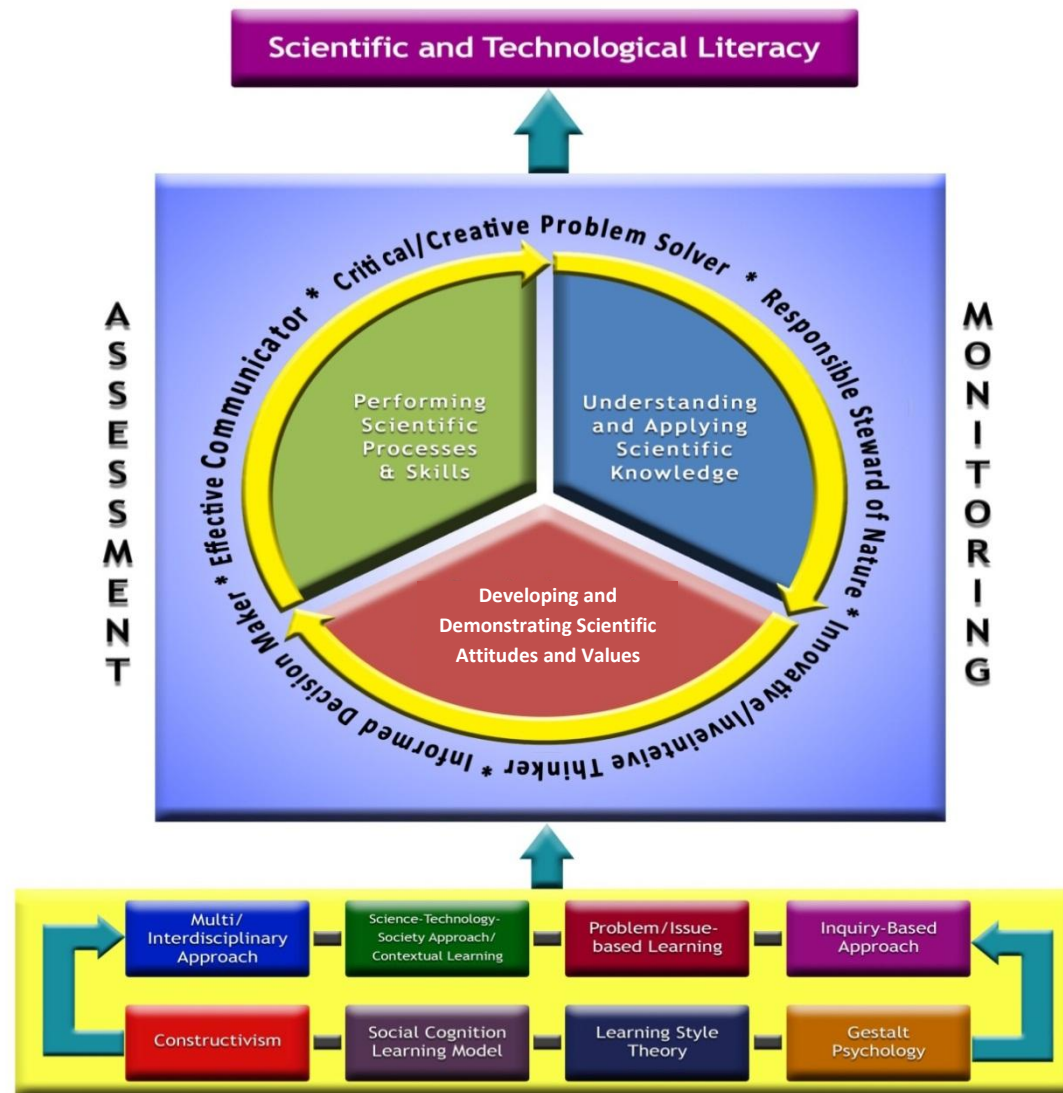
Science education aims to develop scientific literacy among students that will prepare them to be informed and participative citizens who are able to make judgments and decisions regarding applications of scientific knowledge that may have social, health, or environmental impacts.

The science curriculum recognizes the place of science and technology in everyday human affairs. It integrates science and technology in the civic, personal, social, economic, and the values and ethical aspects of life. The science curriculum promotes a strong link between science and technology, including indigenous technology, keeping our country's cultural uniqueness and peculiarities intact.

Whether or not students pursue careers that involve science and technology, the K to 12 science curriculum will provide students with a repertoire of competencies important in the world of work and in a knowledge-based society. The K to 12 science curriculum envisions the development of scientifically, technologically, and environmentally literate and productive members of society who manifest skills as a critical problem solvers, responsible stewards of nature, innovative and creative citizens, informed decision makers, and effective communicators. This curriculum is designed around the three domains of learning science: understanding and applying scientific knowledge in local setting as well as global, context whenever possible, performing scientific processes and skills, and developing and demonstrating scientific attitudes and values. The acquisition of these domains is facilitated using the following approaches: multi/interdisciplinary approach, science–technology society approach, contextual learning, problem/issue-based learning, and inquiry-based approach. The approaches are based on sound educational pedagogy namely: constructivism, social cognition learning model, learning style theory, and Gestalt psychology.

Science content and science processes are intertwined in the K to 12 curriculum. Without the content, learners will have difficulty utilizing science process skills since these processes are best learned in context. Organizing the curriculum around situations and problems that challenge and arouse students' curiosity motivates them to learn and appreciate science as relevant and useful. Rather than relying solely on textbooks, varied hands-on, minds-on, and hearts-on activities will be used to develop students' interest and let them become active learners.

As a whole, the K to 12 science curriculum is learner-centered and inquiry-based, emphasizing the use of evidence in constructing explanations. Concepts and skills in Life Sciences, Physics, Chemistry, and Earth Sciences are presented with increasing levels of complexity from one grade level to another (spiral progression), thus paving the way to deeper understanding of a few concepts. These concepts and skills are integrated rather than discipline-based, stressing the connections across science topics and other disciplines as well as applications of concepts and thinking skills to real life.



The Conceptual Framework of Science Education

**CORE LEARNING AREA STANDARD: (SCIENCE FOR THE ENTIRE K TO 12)**

The learner demonstrates understanding of basic science concepts, applies science process skills, and exhibits scientific attitudes and values to solve problems critically, innovate beneficial products, protect the environment and conserve resources, enhance the integrity and wellness of people, and make informed and unbiased decisions about social issues that involve science and technology. This understanding will lead to learner's manifestation of respect for life and the environment, bearing in mind that Earth is our ONLY HOME.

**KEY STAGE STANDARDS: (STANDARD FOR SCIENCE LEARNING AREA FOR K-3, 4-6, 7-10 AND 11-12)**

K – 3	4 – 6	7 – 10	11-12
At the end of Grade 3, the learners should have acquired healthful habits and developed curiosity about self and their environment using basic process skills of observing, communicating, comparing, classifying, measuring, inferring and predicting. This curiosity will help learners value science as an important tool in helping them continue to explore their natural and physical environment.	At the end of Grade 6, the learners should have developed the essential skills of scientific inquiry – designing simple investigations, using appropriate procedure, materials and tools to gather evidence, observing patterns, determining relationships, drawing conclusions based on evidence, and communicating ideas in varied ways to make meaning of the observations and/or changes that occur in the environment. The content and skills learned will be applied to maintain good health, ensure the protection and improvement of the environment, and practice safety measures.	At the end of Grade 10, the learner should have developed scientific, technological and environmental literacy so that they will not be isolated from the society where they live, will not be overwhelmed by change, and can make rational choices on issues confronting them. Having been exposed to scientific investigations related to real-life, they should recognize that the central feature of an investigation is that if one variable is changed (while controlling all others), the effect of the change on another variable is measured. The context of the investigation can be problems at the local or national level to allow them to communicate with students in other parts of the Philippines or even from other countries using appropriate technology.	At the end of Grade 12, the learner should have gained skills in obtaining scientific and technological information from varied sources about global issues that have impact on the country. They should have acquired attitudes that will allow them to innovate and/or create products useful to the community or country. They should be able to process information to get relevant data for a problem at hand. In addition, learners should have made plans related to their interests and expertise, considering the needs of their community and the country — to pursue either employment, entrepreneurship, or higher education.

Grade/Level	Grade Level Standards
Grade 1	<p>At the end of Grade 1, learners will use their senses to locate and describe the parts of their body and tell the shape, color, texture, taste, and size of things around them. They will differentiate sounds produced by animals, vehicles cars, and musical instruments. They will illustrate how things move. They will describe similarities and differences, given two things. They will use appropriate terms or vocabulary to describe these features. They will collect, sort, count, draw, take things apart, or make something out of the things. They will practice health habits (e.g., washing hands properly, choosing nutritious food) and help clean or pack away their toys. They will ask questions. They will give simple answer/ descriptions to probing questions.</p> <p><i>(Note: These competencies are developed in the learning areas of Mother Tongue, English, Health and Mathematics.)</i></p>
Grade 2	<p>At the end of Grade 2, learners will use their senses to describe more than two objects and using more than two properties. They can sort things in different ways and give a reason for doing so. They will describe the kind of weather or certain events in the home or school and express how these are affecting them. They will tell why some things around them are important. They will decide if what they do is safe or dangerous. They will give suggestions on how to prevent accidents at home (not playing with matches or sharp objects). They will switch off light when not in use or conserve water when taking a bath or brushing teeth. They will help take care of pets or of plants. They will tell short stories about what they do, what they have seen, or what they feel.</p> <p><i>(Note: These competencies are developed in the learning areas of Mother Tongue, English, Health and Mathematics.)</i></p>
Grade 3	<p>At the end of Grade 3, learners will describe the functions of the different parts of the body and things that make up their surroundings --- rocks and soil, plants and animals, the Sun, Moon and stars. They will also learn that things may be solid, liquid or gas while others may give off light, heat and sound. They will also observe changes in the conditions of their surroundings. These will lead learners to become more curious about their surroundings, appreciate nature, and practice health and safety measures.</p>
Grade 4	<p>After investigating, learners will identify materials that do not decay and use this knowledge to help minimize waste at home, school, and in the community. They will also investigate changes in the properties of materials when these are subjected to different conditions.</p> <p>The learners will describe the internal parts of the body and their functions in order to practice ways to maintain good health. They will classify plants and animals according to where they live and observe interactions among living things and their environment. They will infer that plants and animals have traits that help them survive in their environment.</p> <p>Learners will investigate which type of soil is best for certain plants and infer the importance of water in daily activities. They will learn about what makes up weather and apply their knowledge of weather conditions in making decisions for the day. Learners will also infer the importance of the Sun to life on Earth.</p> <p>Learners will investigate the effects of push or pull on the size, shape, and movement of an object</p>

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Grade/Level	Grade Level Standards
Grade 5	<p>After investigating, learners will decide whether materials are safe and useful based on their properties. They will also infer that new materials may form when there are changes in properties.</p> <p>Learners will develop healthful and hygienic practices related to the reproductive system after describing changes that accompany puberty. They will compare different modes of reproduction among plant and animal groups and conduct an investigation on pollination. They will also make decisions about the preservation of estuaries and intertidal zones.</p> <p>Learners will recognize that different materials react differently with heat, light, and sound. They will relate these abilities of materials to their specific uses.</p> <p>Learners will describe the changes that earth materials undergo. They will learn about the effects of typhoons and make emergency plans with their families in preparation for typhoons. They will also observe patterns in the natural events by observing the appearance of the Moon</p>
Grade 6	<p>Learners will understand how the different organ systems work together. They will classify plants based on reproductive structures and animals based on the presence or lack of backbone. They will design and conduct an investigation on plant propagation. They will also learn about larger ecosystems such as rainforests, coral reefs, and mangrove swamps.</p> <p>Learners will recognize that when mixed together, materials do not form new ones thus these materials may be recovered using different separation techniques. Learners will also prepare useful mixtures such as food, drinks and herbal medicines.</p> <p>Learners will describe what happens during earthquakes and volcanic eruptions and demonstrate what to do when they occur. They will infer that the weather follows a pattern in the course of a year. They will learn about the solar system, with emphasis on the motions of the Earth as prerequisite to the study of seasons in another grade level.</p> <p>Learners will infer that friction and gravity affect how people and objects move. They will also discover that heat, light, sound, electricity, and motion studied earlier are forms of energy and these undergo transformation.</p>
Grade 7	<p>Learners will recognize the system of classification of matter through semi-guided investigations but emphasizing fair testing.</p> <p>Learners will describe what makes up the Philippines as a whole and the resources found in the archipelago. They will explain the</p>

Grade/Level	Grade Level Standards
	<p>occurrence of breezes, monsoons, and ITCZ and how these weather systems affect people. Using concepts in the previous grade, learners will demonstrate why the seasons change and how eclipses occur.</p> <p>Learners will describe the motion of objects in terms of distance and speed and represent this in tables, graphs, charts, and equations. They will also investigate how various forms of energy travel through different media.</p> <p>After studying how organ systems work together in plants and animals in the lower grades, learners will now observe very small organisms and structures using a microscope. They will understand that living things are organized into different levels: cells, tissues, organs, organ systems, and organisms. These organisms comprise populations and communities which interact with nonliving things in ecosystems.</p>
Grade 8	<p>Learners will now recognize reproduction as a process of cell division resulting in growth of organisms. They will also deal deeper into the process of digestion studied in the lower grades giving emphasis on proper nutrition for overall wellness. This will lead them to participate in activities that will protect and conserve economically important species used for food.</p> <p>Learners will explain the behavior of matter in terms of the particles it is made of. They will also recognize that ingredients in food and medical products are made up of these particles and are absorbed by the body in the form of ions.</p> <p>Learners will explain how active faults generate earthquakes and how tropical cyclones originate from warm ocean waters. They will also learn about the other members of the solar system.</p> <p>Learners will investigate the effects of some factors on the motion of an object based on the Laws of Motion. They will also differentiate the concept of work as used in science and in layman's language. They will also learn about factors that affect the transfer of energy such as the molecular structure of the medium and temperature difference.</p>
Grade 9	<p>After learning about the digestive system, learners will now expand their knowledge to a deeper understanding of the respiratory and circulatory systems to promote overall health. They will also learn about some technologies that will introduce desired traits in economically important plants and animals.</p> <p>Learners will explain how new materials are formed when atoms are rearranged. They will also recognize that a wide variety of useful compounds may arise from such rearrangements.</p> <p>Learners will identify volcanoes in the community or region and distinguish between active and inactive ones. They will also explain how</p>

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Grade/Level	Grade Level Standards
	<p>energy from volcanoes may be tapped for human use. Learners will also learn about climatic phenomena that occur on a global scale. They will also explain why certain constellations can be seen only at certain times of the year.</p> <p>Learners will predict the outcomes of interactions among objects in real life applying the laws of conservation of energy and momentum.</p>
Grade 10	<p>Learners will now complete the study of the entire organism with their deeper study of the excretory and reproductive systems. They will also explain in greater detail how genetic information is passed from parents to offspring and how diversity of species increases the probability of adaptation and survival in changing environments.</p> <p>Learners will recognize the importance of controlling the conditions under which a phenomenon or reaction occurs. They will also recognize that cells and tissues of the human body are made up of water, a few kinds of ions, and biomolecules. These biomolecules may also be found in the food they eat.</p> <p>Learners will show that volcanoes and earthquakes occur in the same places in the world and that these are related to plate boundaries. Learners will also demonstrate ways to ensure safety and reduce damage during earthquakes, tsunamis, and volcanic eruptions.</p> <p>Learners will investigate factors that affect the balance and stability of an object to enable them to practice appropriate positions and movements to achieve efficiency and safety such as in sports and dancing. They will also analyze situations where energy is harnessed for human use whereby heat is released affecting the physical and biological components of the environment.</p>



## GRADE 7

GRADE 7 - Matter FIRST QUARTER/FIRST GRADING PERIOD			
<b>Content</b>	<b>Content Standards</b>	<b>Performance Standards</b>	<b>Learning Competencies</b>
<b>The Investigatory Process</b> <ul style="list-style-type: none"> <li>Ways of acquiring knowledge and solving problems</li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>demonstrates understanding of scientific way of acquiring knowledge and solving problems</li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>conducts simple investigations using the inquiry approach</li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>describes what is meant by fair test.</li> <li>recognizes that the design of an investigation should show fair testing.</li> <li>identifies the components of an investigation: research problem, hypothesis, method for testing hypothesis (identifying independent/dependent variables), and conclusions based on evidence</li> <li>conducts simple investigations using processes involving mixtures common to the locality.</li> <li>chooses an interesting topic for investigation.               <ul style="list-style-type: none"> <li>formulates a research problem.</li> <li>formulates a hypothesis.</li> <li>designs a procedure to test the hypothesis.</li> <li>collects, organizes and interprets data.</li> <li>makes conclusions based on the data, accounting and rejecting the hypothesis.</li> <li>writes a brief summary of the report.</li> <li>shares and presents the results of the investigations with other classmates or schoolmates.</li> </ul> </li> </ul>

<b>Content</b>	<b>Content Standards</b>	<b>Performance Standards</b>	<b>Learning Competencies</b>
<b>Diversity of Materials in the Environment</b> <ul style="list-style-type: none"> <li><i>Solutions</i></li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>demonstrates understanding of solutions such as acids and bases and ways of describing their concentration.</li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>prepares different concentrations of mixtures considering the following:               <ul style="list-style-type: none"> <li>- has practical uses</li> <li>- prepared within the best possible period of time</li> <li>- easily available materials</li> <li>- with right composition and proportion of components.</li> </ul> </li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>investigates the different types of solutions.               <ul style="list-style-type: none"> <li>- unsaturated</li> <li>- saturated</li> <li>- supersaturated</li> </ul> </li> <li>explains the difference between Percentage by Weight and by Volume solutions.</li> <li>identifies and explains the factors affecting solubility.</li> </ul>
<ul style="list-style-type: none"> <li>Acids and Bases</li> </ul>		<ul style="list-style-type: none"> <li>interprets properly product labels of common acids and bases for safety and cost benefits.</li> <li>practices safe ways of handling acids and bases by using protective clothing and safety gears.</li> </ul>	<ul style="list-style-type: none"> <li>recognizes common acids and bases</li> <li>recognizes the concept of pH.</li> <li>investigates properties of acids and bases using natural indicators such as eggplant skin, mayana leaves or violet-colored camote leaves.</li> <li>investigates action of acids on metals and building materials.</li> <li>investigates action of bases on materials.</li> <li>practices safe handling of acids and bases.</li> <li>investigates neutralization of acids and bases.</li> </ul>

<b>Content</b>	<b>Content Standards</b>	<b>Performance Standards</b>	<b>Learning Competencies</b>
<ul style="list-style-type: none"><li>• Substances and Mixtures</li></ul>	<i>The learner...</i> <ul style="list-style-type: none"><li>• demonstrates understanding of the properties of substances which distinguish them from mixtures.</li></ul>	<i>The learner...</i> <ul style="list-style-type: none"><li>• chooses appropriate materials available in the community for specific purposes.</li></ul>	<i>The learner...</i> <ul style="list-style-type: none"><li>• recognizes that a substance has a unique set of properties.</li><li>• investigates the properties of mixtures of varying concentrations.</li></ul>
<ul style="list-style-type: none"><li>• Elements and Compounds</li></ul>	<ul style="list-style-type: none"><li>• demonstrates understanding of classifying substances as elements or compounds and distinguishes between metals and nonmetals.</li></ul>		<ul style="list-style-type: none"><li>• recognizes that substances are classified into elements and compounds.</li><li>• recognizes that compounds consist of specific elements</li><li>• gather information about common elements such as names, symbols and whether it is a metal or nonmetal from a Periodic Table</li></ul>
<ul style="list-style-type: none"><li>• Metals and Nonmetals</li></ul>			<ul style="list-style-type: none"><li>• demonstrates the different properties of metals and nonmetals such as luster, malleability, ductility, and conductivity.</li><li>• recognizes the elements considered as metals and those that are nonmetals.</li></ul>
<b>GRADE 7 - Living Things and Their Environment SECOND QUARTER/SECOND GRADING PERIOD</b>			
<b>Parts and Functions</b> <ul style="list-style-type: none"><li>• Levels of organization</li><li>• Microscopy</li><li>• Animal and plant cells</li><li>• Microorganisms: Fungi, Protists, and Bacteria</li></ul>	<ul style="list-style-type: none"><li>• demonstrates understanding of the different levels of organization</li><li>• demonstrates understanding that aside from plants and animals, there are other much smaller organisms that can only be seen through the microscope; many of which consist of only one cell</li></ul>	<ul style="list-style-type: none"><li>• employs appropriate techniques using standard tools or equipment to gather data about very small objects</li><li>• recognizes that many organisms, including humans, have organ systems that work together to carry out essential processes of the body</li></ul>	<ul style="list-style-type: none"><li>• differentiates organ systems, organs, tissues, cells from each other</li><li>• identifies parts of the microscope and their functions</li><li>• differentiates plant and animal cells according to presence or absence of certain organelles</li></ul>

<b>Content</b>	<b>Content Standards</b>	<b>Performance Standards</b>	<b>Learning Competencies</b>
	<i>The learner...</i>	<i>The learner...</i> <ul style="list-style-type: none"> <li>engages in activities that promote proper nutrition and healthful habits to maintain proper functioning of the organ systems</li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>describes the structures of microorganisms using a microscope</li> <li>identifies beneficial and harmful microorganisms</li> <li>explains why the cell is considered the basic structural and functional unit of all organisms</li> </ul>
<b>Heredity: Inheritance and Variation</b> <ul style="list-style-type: none"> <li>Asexual reproduction in different organisms</li> <li>Sexual reproduction               <ul style="list-style-type: none"> <li>Union of egg cell and sperm cell during fertilization</li> <li>offspring are biologically similar to the parents but not identical</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>demonstrates understanding that reproduction can be asexual or sexual</li> </ul>	<ul style="list-style-type: none"> <li>recognizes which organisms multiply on their own through asexual and sexual means</li> <li>decides on which means of asexual reproduction is appropriate to use in propagating economically important plants</li> </ul>	<ul style="list-style-type: none"> <li>compares asexual and sexual reproduction</li> <li>describes the process of fertilization</li> <li>differentiates offspring resulting from asexual reproduction with that from sexual reproduction in terms of similarities to parents</li> </ul>
<b>Interactions</b> <ul style="list-style-type: none"> <li>Components of an ecosystem: biotic and abiotic</li> <li>Ecological relationships               <ul style="list-style-type: none"> <li>Producers and consumers</li> <li>Symbiotic relationships: parasitism, mutualism</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>demonstrates understanding that organisms interact with each other and with their environment to survive</li> </ul>	<ul style="list-style-type: none"> <li>initiates and/or participates in activities that protect and preserve ecosystems in the locality</li> </ul>	<ul style="list-style-type: none"> <li>identifies which of the things found in the environment are biotic or abiotic</li> <li>describes the different ecological relationships found in an ecosystem</li> <li>describes how energy is transformed through the feeding relationships</li> <li>predicts the effect of changes in one population on other populations in the ecosystem</li> <li>predicts the effect of changes in abiotic factors on the ecosystem</li> </ul>

<b>Content</b>	<b>Content Standards</b>	<b>Performance Standards</b>	<b>Learning Competencies</b>
-non symbiotic relationships: competition, predation  -transfer of energy through trophic levels	<i>The learner...</i>	<i>The learner...</i>	<i>The learner...</i> <ul style="list-style-type: none"> <li>explains the importance of individual and collective actions on protecting and preserving ecosystems</li> </ul>
<b>GRADE 7- Force, Motion and Energy</b> <b>THIRD QUARTER/ THIRD GRADING PERIOD</b>			
<b>Constant and Uniformly Accelerated Motions</b> <ul style="list-style-type: none"> <li>Motion of objects in terms of displacement, speed or velocity, and acceleration</li> </ul>	<ul style="list-style-type: none"> <li>demonstrates understanding of constant and uniformly accelerated motion in one-dimension.</li> </ul>	<ul style="list-style-type: none"> <li>advocates road safety.</li> </ul>	<ul style="list-style-type: none"> <li>describes the motion of an object in terms of distance or displacement, speed or velocity, and acceleration.</li> <li>differentiates quantities (in terms of magnitude and direction) using the concepts of distance vs displacement and speed vs velocity</li> <li>creates and interprets visual representation of the motion of objects such as tape charts, motion graphs.</li> <li>solves problems involving constant and uniformly accelerated motion in one-dimension using scalar quantities.</li> <li>enumerates some technologies that make use of motion detectors and explains/describes their applications.</li> </ul>

<b>Content</b>	<b>Content Standards</b>	<b>Performance Standards</b>	<b>Learning Competencies</b>
<ul style="list-style-type: none"> <li>• Motion Detectors</li> </ul>	<i>The learner...</i>	<i>The learner...</i>	<i>The learner...</i> <ul style="list-style-type: none"> <li>• innovates/enhances a simple toy car to meet some standards through fair testing.</li> <li>• discusses various measures to improve road safety from the point of view of the physics involved.</li> </ul>
<b>Waves</b> <ul style="list-style-type: none"> <li>• Transverse vs longitudinal Waves</li> <li>• Mechanical vs electromagnetic waves</li> <li>• Characteristics of waves</li> </ul>	<ul style="list-style-type: none"> <li>• demonstrates understanding of waves as a carriers of energy.</li> </ul>		<ul style="list-style-type: none"> <li>• infers that energy, like light and sound, travel in the form of waves.</li> <li>• explains how waves carry energy from one place to another.</li> <li>• distinguishes between transverse and longitudinal waves and mechanical and electromagnetic waves.</li> <li>• creates a model to demonstrate the relationship among frequency, amplitude, wavelength, and wave velocity.</li> </ul>
<b>Sound</b> <ul style="list-style-type: none"> <li>• Characteristics of sound</li> </ul>	<ul style="list-style-type: none"> <li>• demonstrates understanding of the characteristics of sound such as pitch and loudness</li> </ul>	<ul style="list-style-type: none"> <li>• recognizes the use of indigenous materials in creating melodious music.</li> </ul>	<ul style="list-style-type: none"> <li>• uses the concepts of wavelength, velocity, and amplitude to describe characteristics of sound such as pitch, loudness and quality.</li> <li>• demonstrates changes in pitch and loudness using real or improvised musical instrument through fair testing.</li> <li>• explains sound production in the human voice box and how pitch, loudness and quality of sound vary from one person to another.</li> </ul>

<b>Content</b>	<b>Content Standards</b>	<b>Performance Standards</b>	<b>Learning Competencies</b>
	<i>The learner...</i>	<i>The learner...</i>	<i>The learner...</i> <ul style="list-style-type: none"> <li>describes how organisms produce, transmit and receive sound of various frequencies (infrasonic, audible and ultrasonic sound).</li> <li>creates harmonious music using indigenous products.</li> </ul>
<b>Light</b> <ul style="list-style-type: none"> <li>Characteristics of light:</li> </ul>	<ul style="list-style-type: none"> <li>demonstrates understanding of the characteristics of light: intensity or brightness and color</li> </ul>	<ul style="list-style-type: none"> <li>appreciates proper lighting in doing various activities.</li> </ul>	<ul style="list-style-type: none"> <li>relates characteristics of light such as color and intensity to frequency and wavelength.</li> <li>designs and implements an experiment that shows that light travels in a straight line.</li> <li>investigates the relationship between light intensity and the distance from a light source through fair testing.</li> </ul>
<b>Heat</b> <ul style="list-style-type: none"> <li>Heat transfer</li> </ul>	<ul style="list-style-type: none"> <li>demonstrates understanding of the different modes of heat transfer: conduction, convection, radiation</li> </ul>	<ul style="list-style-type: none"> <li>chooses right materials for a particular purpose for cooking, food storage, and building homes.</li> </ul>	<ul style="list-style-type: none"> <li>infers the condition necessary for heat transfer to occur.</li> <li>conducts simple investigations to demonstrate the different modes of heat transfer.</li> <li>explains different modes of heat transfer in the molecular level.</li> <li>identifies good and poor conductors of heat and describe their specific uses</li> </ul>

<b>Content</b>	<b>Content Standards</b>	<b>Performance Standards</b>	<b>Learning Competencies</b>
<b>Electricity</b> <ul style="list-style-type: none"> <li>Charges</li> <li>Charging processes</li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>demonstrates understanding of the different charging processes.</li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>protects himself/herself during thunderstorm.</li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>differentiates the three types of charges.</li> <li>demonstrates the different types of charging processes.</li> <li>explains the importance of earthing or grounding.</li> <li>describes how a lightning rod works.</li> </ul>
<b>GRADE 7 - Earth and Space FOURTH QUARTER / FOURTH GRADING PERIOD</b>			
<b>The Philippine Archipelago</b> <ul style="list-style-type: none"> <li>Location of the Philippines in relation to continents and oceans using a coordinate system</li> <li>Physical features of the Philippines</li> <li>Protection and conservation of natural resources</li> </ul>	<ul style="list-style-type: none"> <li>demonstrates understanding of the physical features of the Philippine archipelago and its natural resources, including the ways by which these resources are conserved and protected.</li> </ul>	<ul style="list-style-type: none"> <li>practices conservation and protection of resources (soil, water, rocks and minerals, fossil fuels) in the community.</li> </ul>	<ul style="list-style-type: none"> <li>demonstrates how places on Earth may be located using a coordinate system.</li> <li>describes the location of the Philippines with respect to the continents and oceans of the world.</li> <li>describes the major landforms and bodies of water in the Philippines.</li> <li>recognizes that soil, water, rocks, coal, and other fossil fuels are Earth materials.</li> <li>recognizes that Earth materials provide many of our resources.</li> <li>describes ways of using Earth's resources wisely.</li> <li>investigates the effects of unwise use of Earth's resources.</li> </ul>



<b>Content</b>	<b>Content Standards</b>	<b>Performance Standards</b>	<b>Learning Competencies</b>
<b>Interactions in the Atmosphere</b> <ul style="list-style-type: none"> <li>Land and sea breezes</li> <li>Monsoons</li> <li>Intertropical convergence zone</li> <li>Ozone depletion*</li> <li>Greenhouse effect*</li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>demonstrates understanding of the different phenomena that occur in the atmosphere and how they affect human activities.</li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>adapts and manages weather phenomena-related risks to human lives, properties, and the environment</li> <li>discusses how human activities contribute to or lessen ozone depletion and global warming</li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>describes the different layers of the atmosphere.</li> <li>illustrates how some human activities affect the atmosphere. (*Ozone depletion is included here.)</li> <li>explains how energy from the sun enters the atmosphere. (*Greenhouse effect is included here.)</li> <li>accounts for the occurrence of land and sea breezes and monsoons.</li> <li>gives reasons for the occurrence of the intertropical convergence zone (ITCZ)</li> <li>describes the effects of certain weather systems in the Philippines</li> </ul>
<b>Seasons in the Philippines</b> <ul style="list-style-type: none"> <li>Relation of seasons to the position of the Sun in the sky</li> <li>Causes of seasons in the Philippines</li> </ul>	<ul style="list-style-type: none"> <li>demonstrates understanding of the relationships of the seasons and the position of the sun in the sky</li> </ul>	<ul style="list-style-type: none"> <li>plans activities appropriate to the seasons in the Philippines</li> </ul>	<ul style="list-style-type: none"> <li>using models, relates <ul style="list-style-type: none"> <li>the tilt of the Earth to the length of daytime</li> <li>the length of daytime to the amount of energy received</li> <li>the position of the Earth in its orbit to the height of the Sun in the sky</li> <li>the height of the Sun in the sky to the amount of energy received</li> <li>the latitude of an area to the amount of energy the area receives.</li> </ul> </li> <li>shows what causes the seasons in the Philippines to change using models</li> </ul>

<b>Content</b>	<b>Content Standards</b>	<b>Performance Standards</b>	<b>Learning Competencies</b>
<b>Eclipses</b> <ul style="list-style-type: none"> <li>• Solar eclipse</li> <li>• Lunar eclipse</li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>• demonstrates understanding of the occurrence of eclipses.</li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>• discusses whether or not beliefs and practices about eclipses have scientific basis.</li> </ul>	<i>The learner...</i> <ul style="list-style-type: none"> <li>• communicates how solar and lunar eclipses occur.</li> <li>• collects, records and reports data on the beliefs and practices of the community in relation to eclipses.</li> </ul>