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

K to 12 Curriculum Guide

SCIENCE

(Grade 3 to Grade 10)

December 2013

K to 12 BASIC EDUCATION CURRICULUM

CONCEPTUAL FRAMEWORK

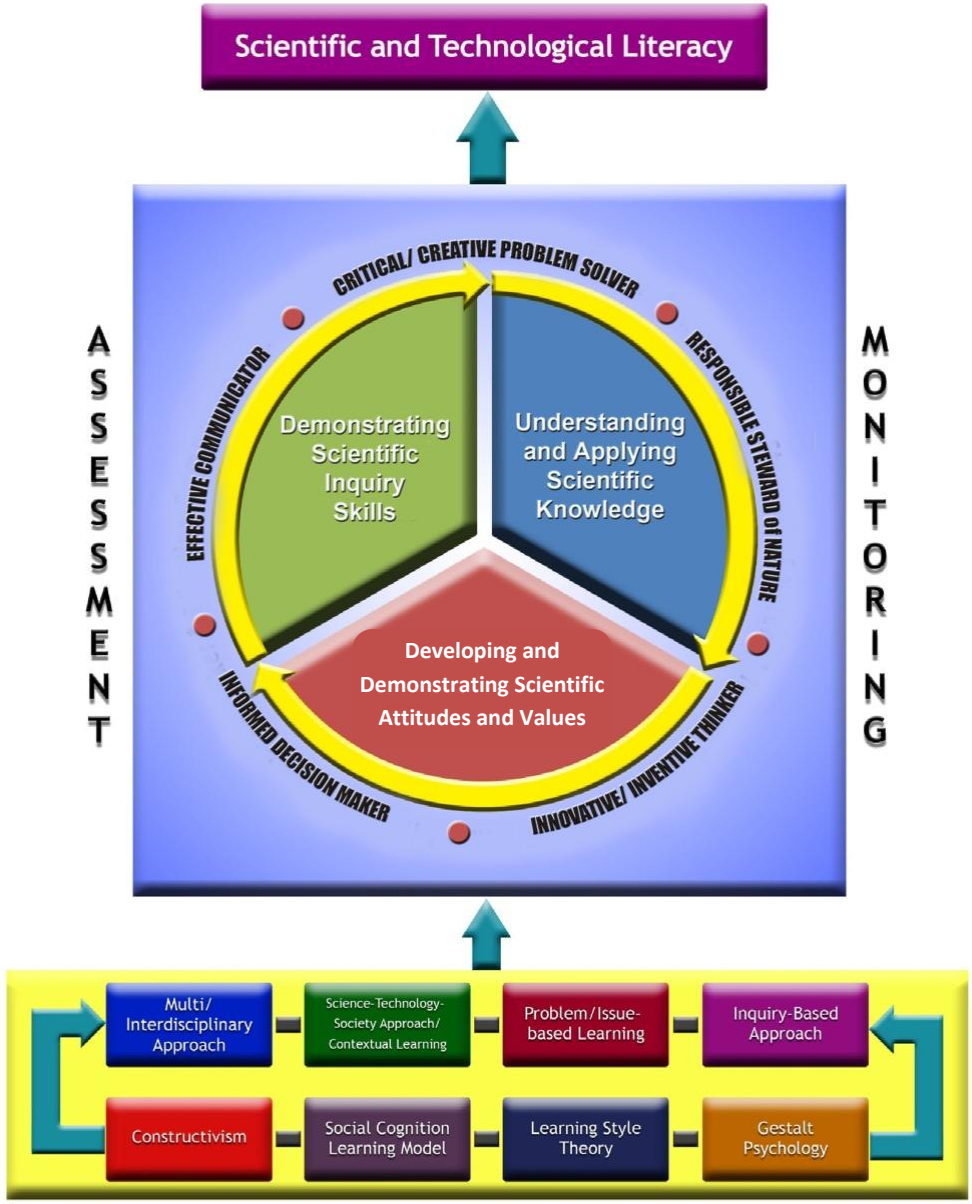
Science education aims to develop scientific literacy among learners that will prepare them to be informed and participative citizens who are able to make judgments and decisions regarding applications of scientific knowledge that may have social, health, or environmental impacts.

The science curriculum recognizes the place of science and technology in everyday human affairs. It integrates science and technology in the social, economic, personal and ethical aspects of life. The science curriculum promotes a strong link between science and technology, including indigenous technology, thus preserving our country's cultural heritage.

The K to 12 science curriculum will provide learners with a repertoire of competencies important in the world of work and in a knowledge-based society. It envisions the development of scientifically, technologically, and environmentally literate and productive members of society who are 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 brain-based learning.

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 learners' 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 learners' 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 in spiral progression, thus paving the way to a deeper understanding of core concepts. The integration across science topics and other disciplines will lead to a meaningful understanding of concepts and its application to real-life situations.



The Conceptual Framework of Science Education

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

The learners demonstrate understanding of basic science concepts and application of science-inquiry skills. They exhibit scientific attitudes and values to solve problems critically, innovate beneficial products, protect the environment and conserve resources, enhance the integrity and wellness of people, make informed decisions, and engage in discussions of relevant issues that involve science, technology, and environment.

KEY STAGE STANDARDS: (STANDARDS FOR SCIENCE LEARNING AREAS FOR K-3, 4-6, 7-10 AND 11-2)

K–3	4–6	7–10	11-12
At the end of Grade 3, the learners should have acquired healthful habits and havedeveloped 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. This should also include developing scientific knowledge or concepts.	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 learners should have developed scientific, technological, and environmental literacyand can make that would lead to 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 can be measured. The context of the investigation can be problems at the local or national level to allow them to communicate with learners in other parts of the Philippines or even from other countries using appropriate technology. The learners should demonstrate an understanding of science concepts and apply science inquiry skills in addressingreal-world problems through scientific investigations.	At the end of Grade 12, the learners 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 scientific 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, with consideration forthe needs of their community and the country — to pursue either employment, entrepreneurship, or higher education.

K to 12 BASIC EDUCATION CURRICULUM

GRADE/LEVEL	Grade-Level Standards
Kindergarten	The learners will demonstrate an emerging understanding of the parts of their body and their general functions; plants, animals and varied materials in their environment and their observable characteristics; general weather conditions and how these influence what they wear; and other things in their environment. Understanding of their bodies and what is around them is acquired through exploration, questioning, and careful observation as they infer patterns, similarities, and differences that will allow them to make sound conclusions.
Grade 1	At the end of Grade 1, learners will use their senses to locate and describe the external parts of their body; to identify, external parts of animals and plants; to tell the shape, color, texture, taste, and size of things around them; to describe similarities and differences given two objects; to differentiate sounds produced by animals, vehicles cars, and musical instruments; to illustrate how things move; to, describe the weather and what to do in different situations; to use appropriate terms or vocabulary to describe these features; to collect, sort, count, draw, take things apart, or make something out of the things; to practice healthy habits (e.g., washing hands properly, choosing nutritious food) and safety measures (e.g., helping to clean or pack away toys, asking questions and giving simple answers/ descriptions to probing questions).
Grade 2	At the end of Grade 2, learners will use their senses to explore and describe the functions of their senses, compare two or more objects and using two or more properties , sort things in different ways and give a reason for doing so, describe the kind of weather or certain events in the home or school and express how these are affecting them, do simple measurements of length, tell why some things around them are important , decide if what they do is safe or dangerous; give suggestions on how to prevent accidents at home, practice electricity, water, and paper conservation, help take care of pets or of plants , and tell short stories about what they do, what they have seen, or what they feel.
Grade 3	At the end of Grade 3, learners can 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 can also classify these things as solid, liquid or gas. They can describe how objects move and what makes them move. They can also identify sources and describe uses of light, heat, sound, and electricity. Learners can describe changes in the conditions of their surroundings. These would lead learners to become more curious about their surroundings, appreciate nature, and practice health and safety measures.
Grade 4	At the end of Grade 4, learners can investigate changes in some observable properties of materials when mixed with other materials or when force is applied on them. They can identify materials that do not decay and use this knowledge to help minimize waste at home, school, and in the community. Learners can describe the functions of the different internal parts of the body in order to practice ways to maintain good health. They can classify plants and animals according to where they live and observe interactions among living things and their environment. They can infer that plants and animals have traits that help them survive in their environment. Learners can investigate the effects of push or pull on the size, shape, and movement of an object. Learners can investigate which type of soil is best for certain plants and infer the importance of water in daily activities. They learned about what makes up weather and apply their knowledge of weather conditions in making decisions for the day. They can infer the importance of the Sun to life on Earth.

GRADE/LEVEL	Grade-Level Standards
Grade 5	At the end of Grade 5, learners can decide whether materials are safe and useful by investigating about some of their properties. They can infer that new materials may form when there are changes in properties due to certain conditions. Learners have developed healthful and hygienic practices related to the reproductive system after describing changes that accompany puberty. They can compare different modes of reproduction among plant and animal groups and conduct an investigation on pollination. They have become aware of the importance of estuaries and intertidal zones and help in their preservation. Learners can describe the movement of objects in terms of distance and time travelled. Learners recognize that different materials react differently with heat, light, and sound. They can relate these abilities of materials to their specific uses. Learners can describe the changes that earth materials undergo. They can make emergency plans with their families in preparation for typhoons. They can observe patterns in the natural events by observing the appearance of the Moon.
Grade 6	At the end of Grade 6, learners recognize that when mixed together, materials may not form new ones thus these materials may be recovered using different separation techniques. They can prepare useful mixtures such as food, drinks and herbal medicines. Learners understand how the different organ systems of the human body work together. They can classify plants based on reproductive structures, and animals based on the presence or lack of backbone. They can design and conduct an investigation on plant propagation. They can describe larger ecosystems such as rainforests, coral reefs, and mangrove swamps. Learners can infer that friction and gravity affect how people and objects move. They have found out that heat, light, sound, electricity, and motion studied earlier are forms of energy and these undergo transformation. Learners can describe what happens during earthquakes and volcanic eruptions and demonstrate what to do when they occur. They can infer that the weather follows a pattern in the course of a year. They have learned about the solar system, with emphasis on the motions of the Earth as prerequisite to the study of seasons in another grade level.
Grade 7	At the end of Grade 7, learners can distinguish mixtures from substances through semi-guided investigations. They realize the importance of air testing when conducting investigations. After studying how organ systems work together in plants and animals in the lower grade levels, learners can use a microscope when observing very small organisms and structures. They recognize that living things are organized into different levels: Cells, tissues, organs, organ systems, and organisms. These organisms comprise populations and communities, which interact with non-living things in ecosystems. Learners can describe the motion of objects in terms of distance and speed, and represent this in tables, graphs, charts, and equations. They can describe how various forms of energy travel through different mediums. Learners describe what makes up the Philippines as a whole and the resources found in the archipelago. They can explain the occurrence of breezes, monsoons, and ITCZ, and how these weather systems affect people. They can explain why seasons change and demonstrate how eclipses occur.

GRADE/LEVEL	Grade-Level Standards
Grade 8	At the end of Grade 8, learners can describe the factors that affect the motion of an object based on the Laws of Motion. They can differentiate the concept of work as used in science and in layman's language. They know the factors that affect the transfer of energy, such as temperature difference, and the type (solid, liquid, or gas) of the medium. Learners can explain how active faults generate earthquakes and how tropical cyclones originate from warm ocean waters. They recognize other members of the solar system. Learners can explain the behaviour of matter in terms of the particles it is made of. They 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. Learners recognize reproduction as a process of cell division resulting in growth of organisms. They have delved deeper into the process of digestion as studied in the lower grades, giving emphasis on proper nutrition for overall wellness. They can participate in activities that protect and conserve economically important species used for food.
Grade 9	At the end of Grade 9, learners have gained a a deeper understanding of the digestive, respiratory, and circulatory systems to promote overall health. They have become familiar with some technologies that introduce desired traits in economically important plants and animals. Learners can explain how new materials are formed when atoms are rearranged. They recognize that a wide variety of useful compounds may arise from such rearrangements. Learners can identify volcanoes and distinguish between active and inactive ones. They can explain how energy from volcanoes may be tapped for human use. They are familiar with climatic phenomena that occur on a global scale. They can explain why certain constellations can be seen only at certain times of the year. Learners can predict the outcomes of interactions among objects in real life applying the laws of conservation of energy and momentum.
Grade 10	At the end of Grade 10, learners realize that volcanoes and earthquakes occur in the same places in the world and that these are related to plate boundaries. They can demonstrate ways to ensure safety and reduce damage during earthquakes, tsunamis, and volcanic eruptions. Learners can explain the factors affecting the balance and stability of an object to help them practice appropriate positions and movements to achieve efficiency and safety such as in sports and dancing. They can analyze situations in which energy is harnessed for human use whereby heat is released, affecting the physical and biological components of the environment. Learners will have completed the study of the entire organism with their deeper study of the excretory and reproductive systems. They can 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. Learners can explain the importance of controlling the conditions under which a chemical reaction occurs. They 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.

K to 12 BASIC EDUCATION CURRICULUM

SEQUENCE OF DOMAIN/STRANDS PER QUARTER

	G3	G4	G5	G6	G7	G8	G9	G10
1st Quarter	Matter	Matter	Matter	Matter	Matter	Force, Motion,& Energy	Living Things and Their Environment	Earth & Space
2nd Quarter	Living Things and Their Environment	Living Things and Their Environment	Living Things and Their Environment	Living Things and Their Environment	Living Things and Their Environment	Earth & Space	Matter	Force, Motion,& Energy
3rd Quarter	Force, Motion,& Energy	Force, Motion,& Energy	Force, Motion & Energy	Force, Motion,& Energy	Force, Motion,& Energy	Matter	Earth & Space	Living Things and Their Environment
4th Quarter	Earth & Space	Earth & Space	Earth & Space	Earth & Space	Earth & Space	Living Things and Their Environment	Force, Motion,& Energy	Matter

MATTER

Grade 3	Grade 4	Grade 5	Grade 6
PROPERTIES OF MATTER			
When learners observe different objects and materials, they become aware of their different characteristics such as shape, weight, definiteness of volume and ease of flow. Using characteristics, objects and materials can be grouped into solids, liquids or gases.	Aside from being grouped into solids, liquids, or gases, materials may also be grouped according to their ability to absorb water, ability to float or sink, and whether they decay or not	After learning how to read and interpret product labels, learners can critically decide whether these materials are harmful or not. They can also describe ways in which they can use their knowledge of solids and liquids in making useful materials and products.	In Grade 4, the learners have observed the changes when mixing a solid in a liquid or a liquid in another liquid. From these investigations, learners can now describe the appearance of mixtures as uniform or non-uniform and classify them as homogeneous or heterogeneous mixtures.
CHANGES THAT MATTER UNDERGO			
Using the characteristics observed among solids, liquids, and gases, learners investigate ways in which solid turns into liquid, solid into gas, liquid into gas, and liquid into solid, as affected by temperature.	Changes in some characteristics of solid materials can be observed when these are bent, hammered, pressed, and cut. After investigating the changes in some observable characteristics of materials due to temperature in Grade 3, learners can now inquire about changes observed when a solid is mixed with a liquid or when a liquid is mixed with another liquid. Learners learn that some changes in the characteristics of a product such as food or medicine may affect its quality. One way of finding out is by reading and interpreting product labels. This information helps them decide when these products become harmful.	In Grade 4, learners investigated changes in materials that take place at certain conditions, such as applying force, mixing materials, and changing the temperature. In Grade 5, they investigate changes that take place under the following conditions: presence or lack of oxygen (in air), and applying heat. They learn that some of these conditions can result in a new product. Knowing these conditions enable them to apply the "5R method" (recycling, reducing, reusing, recovering and repairing) at home and in school.	Based on the characteristics of the components of a heterogeneous mixture, learners investigate ways of separating these components from the mixture. They will infer that the characteristics of each of the components remain the same even when the component is part of the mixture.

Grade 7	Grade 8	Grade 9	Grade 10
PROPERTIES AND STRUCTURE OF MATTER			
In Grade 6, learners learned how to distinguish homogenous from heterogeneous mixtures. In Grade 7, learners investigate properties of solutions that are homogeneous mixtures. They learn how to express concentrations of solutions qualitatively and quantitatively. They distinguish mixtures from substances based on a set of properties. Learners begin to do guided and semi-guided investigations, making sure that the experiment they are conducting is a fair test.	Using models, learners learn that matter is made up of particles, the smallest of which is the atom. These particles are too small to be seen through a microscope. The properties of materials that they have observed in earlier grades can now be explained by the type of particles involved and the attraction between these particles.	Using their understanding of atomic structure learned in Grade 8, learners describe how atoms can form units called molecules. They also learn about ions. Further, they explain how atoms form bonds (ionic and covalent) with other atoms by the transfer or sharing of electrons. They also learn that the forces holding metals together are caused by the attraction between flowing electrons and the positively charged metal ions. Learners explain how covalent bonding in carbon forms a wide variety of carbon compounds. Recognizing that matter consists of an extremely large number of very small particles, counting these particles is not practical. So, learners are introduced to the unit—mole.	Learners investigate how gases behave in different conditions based on their knowledge of the motion of and distances between gas particles. Learners then confirm whether their explanations are consistent with the Kinetic Molecular Theory. They also learn the relationships between volume, temperature, and pressure using established gas laws. In Grade 9, learners learned that the bonding characteristics of carbon result in the formation of large variety of compounds. In Grade 10, they learn more about these compounds that include biomolecules such as carbohydrates, lipids, proteins, and nucleic acids. Further, they will recognize that the structure of these compounds comprises repeating units that are made up of a limited number of elements such as carbon, hydrogen, oxygen, and nitrogen.
CHANGES THAT MATTER UNDERGO			
Learners recognize that materials combine in various ways and through different processes, contributing to the wide variety of materials. Given this diversity, they recognize the importance of a classification system. They become familiar with elements and compounds, metals and non-metals, and acids and bases. Further, learners demonstrate that homogeneous mixtures can be separated using various techniques.	Learners learn that particles are always in motion. They can now explain that the changes from solid to liquid, solid to gas, liquid to solid, and liquid to gas, involve changes in the motion of and relative distances between the particles, as well as the attraction between them. They also recognize that the same particles are involved when these changes occur. In effect, no new substances are formed.	Learners explain how new compounds are formed in terms of the rearrangement of particles. They also recognize that a wide variety of useful compounds may arise from such rearrangements.	In Grade 9, learners described how particles rearrange to form new substances. In Grade 10, they learn that the rearrangement of particles happen when substances undergo chemical reaction. They further explain that when this rearrangement happens, the total number of atoms and total mass of newly formed substances remain the same. This is the Law of Conservation of Mass. Applying this law, learners learn to balance chemical equations and solve simple mole-mole, mole-mass, and mass-mass problems.

LIVING THINGS AND THEIR ENVIRONMENT

Grade 3	Grade 4	Grade 5	Grade 6
PARTS AND FUNCTION OF ANIMALS AND PLANTS			
In Grade 3, learners observe and describe the different parts of living things focusing on the sense organs of humans and the more familiar external parts of animals and plants. They also explore and describe characteristics of living things that distinguish them from non-living things.	In Grade 4, the learners are introduced to the major organs of the human body. They also learn about some parts that help plants and animals survive in places where they live.	After learning in Grade 4 how the major organs of the human body work together, the learners now focus on the organs of the reproductive systems of humans, animals, and plants.	In Grade 6, learners describe the interactions among parts of the major organs of the human body. They also learn how vertebrates and invertebrates differ and how non-flowering plants reproduce,
HEREDITY:INHERITANCE AND VARIATION			
Learners learn that living things reproduce and certain traits are passed on to their offspring/s.	Learners learn that humans, animals, and plants go through life cycles. Some inherited traits may be affected by the environment at certain stages in their life cycles.	Learners learn how flowering plants and some non-flowering plants reproduce. They are also introduced to the sexual and asexual modes of reproduction.	Learners learn how non-flowering plants (spore-bearing and cone-bearing plants, ferns, and mosses) reproduce.
BIODIVERSITY AND EVOLUTION			
Different kinds of living things are found in different places.	Learners investigate that animals and plants live in specific habitats.	Learners learn that reproductive structures serve as one of the bases for classifying living things.	They learn that plants and animals share common characteristics which serve as bases for their classification.
ECOSYSTEMS			
Learners learn that living things depend on their environment for food, air, and water to survive.	Learners learn that there are beneficial and harmful interactions that occur among living things and their environment as they obtain their basic needs.	Learners are introduced to the interactions among components of larger habitats such as estuaries and intertidal zones, as well as the conditions that enable certain organisms to live.	Learners are introduced to the interactions among components of habitats such as tropical rainforests, coral reefs, and mangrove swamps.

Grade 7	Grade 8	Grade 9	Grade 10
PARTS AND FUNCTION: ANIMAL AND PLANTS			
In Grade 7, learners are introduced to the levels of organization in the human body and other organisms. They learn that organisms consist of cells, most of which are grouped into organ systems that perform specialized functions.	In Grade 8, learners gain knowledge of how the body breaks down food into forms that can be absorbed through the digestive system and transported to cells. Learners learn that gases are exchanged through the respiratory system. This provides the oxygen needed by cells to release the energy stored in food. They also learn that dissolved wastes are removed through the urinary system while solid wastes are eliminated through the excretory system.	Learners study the coordinated functions of the digestive, respiratory, and circulatory systems. They also learn that nutrients enter the bloodstream and combine with oxygen taken in through the respiratory system. Together, they are transported to the cells where oxygen is used to release the stored energy.	Learners learn that organisms have feedback mechanisms that are coordinated by the nervous and endocrine systems. These mechanisms help the organisms maintain homeostasis to reproduce and survive.
HEREDITY:INHERITANCE AND VARIATION			
After learning how flowering and non flowering plants reproduce, Grade 7 learners are taught that asexual reproduction results in genetically identical offspring whereas sexual reproduction gives rise to variation.	Learners study the process of cell division by mitosis and meiosis. They understand that meiosis is an early step in sexual reproduction that leads to variation.	Learners study the structure of genes and chromosomes, and the functions they perform in the transmission of traits from parents to offspring.	Learners are introduced to the structure of the DNA molecule and its function. They also learn that changes that take place in sex cells are inherited while changes in body cells are not passed on.
BIODIVERSITY AND EVOLUTION			
Learners learn that the cells in similar tissues and organs in other animals are similar to those in human beings but differ somewhat from cells found in plants.	Learners learn that *species* refers to a group of organisms that can mate with one another to produce fertile offspring. They learn that biodiversity is the collective variety of species living in an ecosystem. This serves as an introduction to the topic on hierarchical	Learners learn that most species that have once existed are now extinct. Species become extinct when they fail to adapt to changes in the environment.	Learners revisit the mechanisms involved in the inheritance of traits and the changes that result from these mechanisms. Learners explain how natural selection has produced a succession of diverse new species. Variation increases the chance of living

Grade 7	Grade 8	Grade 9	Grade 10
	taxonomic system.		things to survive in a changing environment.
ECOSYSTEMS			
Learners learn that interactions occur among the different levels of organization in ecosystems. Organisms of the same kind interact with each other to form populations; populations interact with other populations to form communities.	Learners learn how energy is transformed and how materials are cycled in ecosystems.	Learners learn how plants capture energy from the Sun and store energy in sugar molecules (photosynthesis). This stored energy is used by cells during cellular respiration. These two processes are related to each other.	Learners investigate the impact of human activities and other organisms on ecosystems. They learn how biodiversity influences the stability of ecosystems.

FORCE, MOTION AND ENERGY

Grade 3	Grade 4	Grade 5	Grade 6
FORCE AND MOTION			
Learners observe and explore and investigate how things around them move and can be moved. They also identify things in their environment that can cause changes in the movement of objects.	Learners now learn that if force is applied on an object, its motion, size, or shape can be changed. They will further understand that these changes depend on the amount of force applied on it (qualitative). They also learn that magnets can exert force on some objects and may cause changes in their movements.	This time, learners begin to accurately measure the amount of change in the movement of an object in terms of its distance travelled and time of travel using appropriate tools.	Aside from the identified causes of motion in Grade 3, such as people, animals, wind, and water, learners also learn about gravity and friction as other causes or factors that affect the movement of objects.
ENERGY			
Learners observe and identify different sources of light, heat, sound, and electricity in their environment and their uses in everyday life.	Learners learn that light, heat, and sound travel from the source. They perform simple activities that demonstrate how they travel using various objects.	This time, learners explore how different objects interact with light, heat, sound, and electricity (e.g., identifying poor and good conductors of electricity using simple circuits).	At this grade level, learners are introduced to the concept of energy. They learn that energy exists in different forms, such as light, heat, sound and electricity, and it can be

Grade 3	Grade 4	Grade 5	Grade 6
	Note: Electricity is not included in Grade 4 because the concept of 'flow of charges' is difficult to understand at this grade level.	They learn about the relationship between electricity and magnetism by constructing an electromagnet. They also learn about the effects of light, heat, sound, and electricity on people.	transformed from one form to another. They demonstrate how energy is transferred using simple machines.

Grade 7	Grade 8	Grade 9	Grade 10
FORCE AND MOTION			
From a simple understanding of motion, learners study more scientific ways of describing (in terms of distance, speed, and acceleration) and representing (using motion diagrams, charts, and graphs) the motion of objects in one dimension.	This time, learners study the concept of force and its relationship to motion. They use Newton's Laws of Motion to explain why objects move (or do not move) the way they do (as described in Grade 7). They also realize that if force is applied on a body, work can be done and may cause a change in the energy of the body.	To deepen their understanding of motion, learners use the Law of Conservation of Momentum to further explain the motion of objects. From motion in one dimension in the previous grades, they learn at this level about motion in two dimensions using projectile motion as an example.	From learning the basics of forces in Grade 8, learners extend their understanding of forces by describing how balanced and unbalanced forces, either by solids or liquids, affect the movement, balance, and stability of objects.
ENERGY			
This time learners recognize that different forms of energy travel in different ways—light and sound travel through waves, heat travels through moving or vibrating particles, and electrical energy travels through moving charges. In Grade 5, they learned about the different modes of heat transfer. This time, they explain these modes in terms of the movement of particles.	Learners realize that transferred energy may cause changes in the properties of the object. They relate the observable changes in temperature, amount of current, and speed of sound to the changes in energy of the particles.	Learners explain how conservation of mechanical energy is applied in some structures, such as roller coasters, and in natural environments like waterfalls. They further describe the transformation of energy that takes place in hydroelectric power plants. Learners also learn about the relationship between heat and work, and apply this concept to explain how geothermal power plants operate. After they have learned how electricity is generated in power plants, learners further develop their understanding of transmission of electricity from power stations to homes.	Learners acquire more knowledge about the properties of light as applied in optical instruments. Learners also use the concept of moving charges and magnetic fields in explaining the principle behind generators and motors.

EARTH AND SPACE

Grade 3	Grade 4	Grade 5	Grade 6
GEOLOGY			
Learners will describe what makes up their environment, beginning with the landforms and bodies of water found in their community.	After familiarizing themselves with the general landscape, learners will investigate two components of the physical environment in more detail: soil and water. They will classify soils in their community using simple criteria. They will identify the different sources of water in their community. They will infer the importance of water in daily activities and describe ways of using water wisely.	In this grade level, learners will learn that our surroundings do not stay the same forever. For example, rocks undergo weathering and soil is carried away by erosion. Learners will infer that the surface of the Earth changes with the passage of time.	Learners will learn that aside from weathering and erosion, there are other processes that may alter the surface of the Earth: earthquakes and volcanic eruptions. Only the effects of earthquakes and volcanic eruptions are taken up in this grade level, not their causes (which will be tackled in Grades 8 and 9). Learners will also gather and report data on earthquakes and volcanic eruptions in their community or region.
METEOROLOGY			
Learners will describe the different types of local weather,	After making simple descriptions about the weather in the previous grade, learners will now measure the components of weather using simple instruments. They will also identify trends in a simple weather chart.	Learners will learn that the weather does not stay the same the whole year round. Weather disturbances such as typhoons may occur. Learners will describe the effects of typhoons on the community and the changes in the weather before, during, and after a typhoon.	After learning how to measure the different components of weather in Grades 4 and 5, learners will now collect weather data within the span of the school year. Learners will interpret the data and identify the weather patterns in their community.
ASTRONOMY			
Learners will describe the natural objects that they see in the sky.	After describing the natural objects that are seen in the sky, learners will now focus on the main source of heat and light on Earth: the Sun, its role in plant growth and development, and its effect on the activities of humans and other animals.	After learning about the Sun, learners will now familiarize themselves with the Moon and the stars. They will describe the changes in the appearance of the Moon and discover that the changes are cyclical, and that the cycle is related to the length of a month. Learners will identify star patterns that can be seen during certain times of the year.	In Grade 6, learners will turn their attention to Earth as another natural object in space (in addition to the Sun, Moon, and stars). Learners will learn about the motions of the Earth: rotation and revolution. Learners will also compare the different members that make up the Solar System and construct models to help them visualize their relative sizes and distances.

Grade 7	Grade 8	Grade 9	Grade 10
GEOLOGY			
Learners will explore and locate places using a coordinate system. They will discover that our country's location near the equator and along the Ring of Fire influences elements of up Philippine environment (e.g., natural resources and climate).	As a result of being located along the Ring of Fire, the Philippines is prone to earthquakes. Using models, learners will explain how quakes are generated by faults. They will try to identify faults in the community and differentiate active faults from inactive ones.	Being located along the Ring of Fire, the Philippines is home to many volcanoes. Using models, learners will explain what happens when volcanoes erupt. They will describe the different types of volcanoes and differentiate active volcanoes from inactive ones. They will also explain how energy from volcanoes may be tapped for human use.	Using maps, learners will discover that volcanoes, earthquake epicenters, and mountain ranges are not randomly scattered in different places but are located in the same areas. This will lead to an appreciation of plate tectonics—a theory that binds many geologic processes such as volcanism and earthquakes.
METEOROLOGY			
Learners will explain the occurrence of atmospheric phenomena (breezes, monsoons, and ITCZ) that are commonly experienced in the country as a result of the Philippines' location with respect to the equator, and surrounding bodies of water and landmasses.	Being located beside the Pacific Ocean, the Philippines is prone to typhoons. In Grade 5, the effects of typhoons were tackled. Here, learners will explain how typhoons develop, how typhoons are affected by landforms and bodies of water, and why typhoons follow certain paths as they move within the Philippine Area of Responsibility.	In this grade level, learners will distinguish between weather and climate. They will explain how different factors affect the climate of an area. They will also be introduced to climatic phenomena that occur over a wide area (e.g., El Niño and global warming).	**Note:** The theory of plate tectonics is the sole topic in Earth and Space in Grade 10. This is because the theory binds many of the topics in previous grade levels, and more time is needed to explore connections and deepen learners' understanding.
ASTRONOMY			
Learners will explain the occurrence of the seasons and eclipses as a result of the motions of the Earth and the Moon. Using models, learners will explain that because the Earth revolves around the Sun, the seasons change, and because the Moon revolves around the Earth, eclipses sometimes occur.	Learners will complete their survey of the Solar System by describing the characteristics of asteroids, comets, and other members of the Solar System.	Learners will now leave the Solar System and learn about the stars beyond. They will infer the characteristics of stars based on the characteristics of the Sun. Using models, learners will show that constellations move in the course of a night because of Earth's rotation, while different constellations are observed in the course of a year because of the Earth's revolution.	

K to 12 BASIC EDUCATION CURRICULUM
GRADE 3

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 3 – Matter **FIRST QUARTER/FIRST GRADING PERIOD**					
1. Properties 1.1. **Characteristics of solids, liquids, and gases**	*The Learners demonstrate understanding of…* ways of sorting materials and describing them as solid, liquid or gas based on observable properties	*The Learners should be able to…* group common objects found at home and in school according to solids, liquids and gas	*The Learners should be able to…* 1. describe different objects based on their characteristics (e.g. Shape, Weight, Volume, Ease of flow);	**S3MT-Ia-b-1**	• Learning Guide in Science & Health :Mixtures • BEAM – Grade 3 Unit 4 Materials LG – Science 3 Materials Module 1
			2. classify objects and materials as solid, liquid, and gas based on some observable characteristics;	**S3MT-Ic-d-2**	
			3. describe ways on the proper use and handling solid, liquid and gas found at home and in school; and	**S3MT-Ie-g-3**	
2. Changes that Materials Undergo	effects of temperature on materials	investigate the different changes in materials as affected by temperature	4. describe changes in materials based on the effect of temperature: 4.1 Solid to liquid 4.2 Liquid to solid 4.3 Liquid to gas 4.4 Solid to gas	**S3MT-Ih-j-4**	• BEAM –Gr. 3 Unit 3 Materials-Distance Learning Module 43 • BEAM –Gr. 3 Unit 3 Materials Module 44-49

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 3 – Living Things and Their Environment SECOND QUARTER/SECOND GRADING PERIOD					
1.Living Things **1.1Humans** **1.1.a Sense Organs**	*The Learners demonstrate understanding of…* parts, and functions of the sense organs of the human body	*The Learners should be able to…* practice healthful habits in taking care of the sense organs	*The Learners should be able to…* 1. describe the parts and functions of the sense organs of the human body;	**S3LT-IIa-b-1**	• BEAM-Grade 3-Unit People- • Learning Guide • & Distance Learning Module
			2. enumerate healthful habits to protect the sense organs;	**S3LT-IIa-b-2**	
2.Living Things **2.1 Animals**	parts and functions of animals and importance to humans	enumerate ways of grouping animals based on their structure and importance	3. describe animals in their immediate surroundings;	**S3LT-IIc-d3**	• BEAM-Grade 3-Unit 2-AnimalsDLP-Science 3 DLP 19 • Beam –Grade 3 –Unit 2-animals • DLP-Science 3 DLP 31&32 • Learning Guide in Science & Health: • The Body Guards
			4. identify the parts and functions of animals;	**S3LT-IIc-d-4**	
			5. classify animals according to body parts and use;	**S3LT-IIc-d-5**	
			6. state the importance of animals to humans;	**S3LT-IIc-d-6**	
			7. describe ways of proper handling of animals;	**S3LT-IIc-d-7**	
3. Living Things **3.1 Plants**	external parts of plants and their functions, and importance to humans	demonstrate the proper ways of handling plants	8. describe the parts of different kinds of plants;	**S3LT-IIe-f-8**	• BEAM –Grade 3-Unit 3 –Plants • DLP-Science 3 DLP 38 • Learning Guide: • How do Plants protect themselves?
			9. state the importance of plants to humans;	**S3LT-IIe-f-9**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
			10. describe ways of caring and proper handling of plants;	**S3LT-IIe-f-10**	• BEAM-Grade 3-Unit 3-Plants
	characteristics of living and nonliving things	illustrates the difference between living and non-living things	11. compare living with nonliving things;	**S3LT-IIe-f-11**	
4. Heredity: Inheritance and Variation	reproduction among humans, animals and plants and certain observable characteristics that are passed from parents to offspring	given a photo of offspring and parents, make a checklist of possible characteristics that the offspring inherited from the parents	12. infer that living things reproduce;	**S3LT-IIg-h12**	• Learning Guide in Science and Health • Learning Guide in Science and Health: What do animals eat
			13. identify observable characteristics that are passed on from parents to offspring (e.g., humans, animals, plants);	**S3LT-IIg-h13**	
5.Ecosystems	basic needs of plants, animals and humans	list down activities which they can perform at home, in school, or in their neighborhood to keep the environment clean	14. identify the basic needs of humans, plants and animals such as air, food, water, and shelter;	**S3LT-IIi-j-14**	• Learning Guide in Science and Health: • There is No Place Like Home • (print-BEE)
			15. explain how living things depend on the environment to meet their basic needs; and	**S3LT-IIi-j-15**	
			16. recognize that there is a need to protect and conserve the environment.	**S3LT-IIi-j-16**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 3 – Force and Motion **THIRD QUARTER/THIRD GRADING PERIOD**					
1. Force and Motion	*The learners demonstrate understanding of…* motion of objects	*The learners should be able to…* observe, describe, and investigate the position and movement of things around them	*The Learners should be able to…* 1. describe the position of a person or an object in relation to a reference point such as chair, door, another person;	**S3FE-IIIa-b-1**	• Learning Guide in Science and Health: • (Print-BEE)
			2. identify things that can make objects move such as people, water, wind, magnets;	**S3FE-IIIc-d-2**	
			3. describe the movements of objects such as fast/slow, forward/backward, stretching/compressing;	**S3FE-IIIe-f-3**	
2. Energy: Light, sound. **2.1 Heat and Electricity**	sources and uses of light, sound, heat and electricity	apply the knowledge of the sources and uses of light, sound, heat, and electricity	4. describe sources of light and sound, heat and electricity; and	**S3FE-IIIg-h-4**	
			5. enumerate uses of light, sound, heat and electricity.	**S3FE-IIIi-j-3**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 3 – Earth and Space **FOURTH QUARTER/FOURTH GRADING PERIOD**					
1. Earth and Space **1.1The Surroundings**	*The Learners demonstrate understanding of…* people, animals, plants, lakes, rivers, streams, hills, mountains, and other landforms, and their importance	*The Learners should be able to…* express their concerns about their surroundings through teacher-guided and self – directed activities	*The Learners should be able to…* 1. describe the things found in the surroundings;	**S3ES-IVa-b-1**	• BEAM-Grade3-Unit 6-Earth • (Learning Guides-2 Me and My Environment)
			2. relate the importance of surroundings to people and other living things;	**S3ES-IVc-d-2**	
2. Earth and Space **2.1Weather**	types and effects of weather as they relate to daily activities, health and safety	express ideas about safety measures during different weather conditions creatively (through artwork, poem, song)	3. describe the changes in the weather over a period of time;	**S3ES-IVe-f-3**	• Learning Guide in Science and Health: Weather • Learning Guide in Science and Health: Typhoon • Beam-Grade 4-Unit 8 – Weather • (Science 4-DLP 57) • Beam-Grade 4 – Unit 8 – Weather (DLP – Science 4 DLP 58)
			4. communicate how different types of weather affect activities in the community; and	**S3ES-IVg-h-4**	
			5. enumerate and practice safety and precautionary measures in dealing with different types of weather.	**S3ES-IVg-h-5**	
3. Earth and Space **3.1Natural Objects in the Sky**	natural objects in the sky affect one's daily activities	list down activities which affect their daily activities	6. describe the natural objects that are found in the sky during daytime and nighttime	**S3ES-IVg-h-6**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
			7. communicate how the natural objects in the sky affect daily activities	**S3ES-IVg-h-7**	
			8. enumerate safety measures to avoid the harmful effects of the Sun's heat and light	**S3ES-IVg-h-8**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 4 – Matter **FIRST QUARTER/FIRST GRADING PERIOD**					
1. Properties 1.1. Properties used to group and store materials 1.2. Importance of interpreting product labels 1.3. Proper disposal of waste	*The Learners demonstrate understanding of…* grouping different materials based on their properties	*The Learners should be able to…* Recognize and practice proper handling of products	*The Learners should be able to…* 1. classify materials based on the ability to absorb water, float, sink, undergo decay;	**S4MT-Ia-1**	
			2. identify the effects of decaying materials on one's health and safety;	**S4MT-Ib-2**	
			3. demonstrate proper disposal of waste according to the properties of its materials;	**S4MT-Ic-d-3**	
2. Changes that Materials Undergo 2.1. Changes that are useful 2.2. Changes that are harmful	changes that materials undergo when exposed to certain conditions.	evaluate whether changes in materials are useful or harmful to one's environment	4. describe changes in solid materials when they are bent, pressed, hammered, or cut;	**S4MT-Ie-f-5**	
			5. describe changes in properties of materials when exposed to certain conditions such as temperature or when mixed with other materials; and	**S4MT-Ig-h-6**	
			6. identify changes in materials whether useful or harmful to one's environment.	**S4MT-Ii-j-7**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 4 – Living Things and Their Environment SECOND QUARTER/SECOND GRADING PERIOD					
Parts and Functions **1. Humans** 1.1 Major organs of the body 1.2 Caring for the major organs 1.3 Diseases that affect the major organs of the human body	*The Learners demonstrate understanding of…* how the major internal organs such as the brain, heart, lungs, liver, stomach, intestines, kidneys, bones, and muscles keep the body healthy	*The Learners should be able to…*	*The Learners should be able to…* 1. describe the main function of the major organs;	**S4LT-IIa-b-1**	• BEAM – Grade 3 –Unit 6-Earth • (Learning Guide- Me and My Environment) • Learning Guide in Science and Health: • Respiratory system
			2. communicate that the major organs work together to make the body function properly;	**S4LT-IIa-b-2**	
			3. identify the causes and treatment of diseases of the major organs;	**S4LT-IIa-b-3**	
			4. practice habits to maintain a healthy body;	**S4LT-IIa-b-4**	
2. Animals 2.1 Live on land or in water	animals have body parts that make them adapt to land or water	construct a prototype model of organism that has body parts which can survive in a given environment	5. infer that body structures help animals adapt and survive in their particular habitat;	**S4LT-IIc-d-5**	• Learning Guide in Science in Science and Health • BEAM-Grade3-Unit 2-Animals(DLP-Science 3 DLP 27 and 28)
			6. compare body movements of animals in their habitat;	**S4LT-IIc-d-6**	
			7. make a survey of animals found in the community and their specific habitats;	**S4LT-IIc-d-7**	
			8. choose which animals to raise in a particular habitat;	**S4LT-IIc-d-8**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
3. Plants 3.1 Live on land or in water	plants have body parts that make them adapt to land or water		9. identify the specialized structures of terrestrial and aquatic plants;	**S4LT-IIe-f-9**	• Learning Guide: How do plants Protect themselves • Learning Guide in Science and Health: Plants, Here. There and Everywhere
			10. conduct investigation on the specialized structures of plants given varying environmental conditions: light, water, temperature, and soil type;	**S4LT-IIe-f-10**	
			11. make a survey of plants found in the community and their specific habitats;	**S4LT-IIe-f-11**	
			12. choose which plants to grow in a particular habitat;	**S4LT-IIe-f-12**	
4. Heredity: Inheritance and Variation **4.1 Life Cycles** 4.2Humans, Animals, and Plants	different organisms go through life cycle which can be affected by their environment		13. compare the stages in the life cycle of organisms;	**S4LT-IIg-h-13**	
			14. describe the effect of the environment on the life cycle of organisms;	**S4LT-IIg-h-14**	
5. Ecosystems 5.1 Beneficial and Harmful interactions	beneficial and harmful interactions occur among living things and their environment as they obtain basic needs		15. describe some types of beneficial interactions among living things;	**S4LT-IIi-j-15**	
			16. describe certain types of harmful interactions among living things; and	**S4LT-IIi-j-16**	
			17. conduct investigations to determine environmental conditions needed by living things to survive.	**S4LT-IIi-j-17**	
			18. describe the effects of interactions among organism in their environment	**S4LT-IIi-j-18**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 4 – Force and Motion **THIRD QUARTER/THIRD GRADING PERIOD**					
1. Effects of Force on Objects 1.1 Shape, size and movement	*The Learners demonstrate understanding of…* force that can change the shape, size or movement of objects.	*The Learners should be able to…*	*The Learners should be able to…* 1. explain the effects of force applied to an object;\	**S4FE-IIIa-1**	
			2. practice safety measures in physical activities and proper handling of materials;	**S4FE-IIIb-c-2**	
			3. describe the force exerted by magnets;	**S4FE-IIId-e-3**	
2. Light, Heat and Sound	how light, heat and sound travel using various objects	demonstrate conceptual understanding of properties/characteristics of light, heat and sound	4. describe how light, sound and heat travel;	**S4FE-IIIf-g-4**	
			5. investigate properties and characteristics of light and sound; and	**S4FE-IIIh-5**	
			6. describe ways to protect oneself from exposure to excessive light, heat and sound.	**S4FE-IIIi-j-6**	
Grade 4 – Earth and Space **FOURTH QUARTER/FOURTH GRADING PERIOD**					
1. Soil 1.1 Types of soil	*The Learners demonstrate understanding of…* the different types of soil	*The Learners should be able to…*	*The Learners should be able to…* 1. compare and contrast the characteristics of different types of soil;	**S4ES-IVa-1**	• BEAM-Grade 3 – Unit 6 Earth (DLP-Learning Guide –Soil not just a dirt
2. Water in the Environment	the different sources of water suitable for human consumption		2. explain the use of water from different sources in the context of daily activities;	**S4ES-IVb-2**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
2.1 Sources and importance of water			3. infer the importance of water in daily activities;	**S4ES-IVc-3**	
			4. describe the importance of the water cycle.	**S4ES-IVd-4**	
3. Weather 3.1 Components of weather 3.2 Weather instruments 3.3 Weather chart	components of weather using simple instruments	practice precautionary measures in planning activities	5. use weather instruments to measure the different weather components	**S4ES-IVe-5**	• Learning Guide in Science and Health: Warm and cool • Learning Guide in Science and Health: Interpreting Weather Conditions • Learning Guide in Science and Health: typhoon • BEAM-Grade 4-Unit 8 – Weather (Science 4 DLP -54-55 • BEAM – Grade 4 –Unit 8 – Weather (DLP –Science 4-DLP 58)
			6. record in a chart the weather conditions;	**S4ES-IVf-6**	
			7. make simple interpretations about the weather as recorded in the weather chart;	**S4ES-IVf-7**	
			8. identify safety precautions during different weather conditions;	**S4ES-IVg-8**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
4. The Sun 4.1 Importance of the Sun 4.2 Effects of Sun on living things 4.3 Safety precautions	the Sun as the main source of heat and light on Earth		~~9.~~ describe the changes in the position and length of shadows in the surroundings as the position of the Sun changes;	**S4ES-IVh-9**	
			10. describes the role of the Sun in the water cycle; and	**S4ES-IVi-10**	
			11. describe the effects of the Sun	**S4ES-IVj-11**	

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GRADE 5

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 5 – Matter **FIRST QUARTER/FIRST GRADING PERIOD**					
1. Properties 1.1 Useful and harmful materials	*The Learners demonstrate understanding of…* properties of materials to determine whether they are useful or harmful	*The Learner…* uses local, recyclable solid and/or liquid materials in making useful products	*The Learner…* 1. use the properties of materials whether they are useful or harmful;	**S5MT-Ia-b-1**	
2. Changes that Materials Undergo	materials undergo changes due to oxygen and heat		2. investigate changes that happen in materials under the following conditions: 2.1 presence or lack of oxygen; and 2.2 application of heat;	**S5MT-Ic-d-2**	
			3. recognize the importance of recycle, reduce, reuse, recover and repair in waste management; and	**S5MT-Ie-g-3**	
			4. design a product out of local, recyclable solid and/ or liquid materials in making useful products.	**S5MT-Ih-i-4**	
Grade 5 – Living Things and Their Environment **SECOND QUARTER/SECOND GRADING PERIOD**					
1. Parts and Functions **1.1Humans** 1.2 The reproductive	*The Learners demonstrate understanding of…* how the parts of the human reproductive system work	*The Learners should be able to…* Practice proper hygiene to care of the reproductive organs	*The Learners should be able to…* 1. describe the parts of the reproductive system and their functions;	**S5LT-IIa-1**	• BEAM – Grade 5 – Unit 1 – Reproductive System (Science 5 – DLP 1) • BEAM – Grade 5 – Unit 1 - Menstrual
			2. describe the changes that occur during puberty;	**S5LT-IIb-2**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
system			3. explain the menstrual cycle;	**S5LT-IIc-3**	Cycle (Science 5 – DLP 4)
			4. give ways of taking care of the reproductive organs;	**S5LT-IId-4**	
1.2. Animals 1.2.1 reproductive system of animals 1.2.2 modes of reproduction in animals	how animals reproduce		5. describe the different modes of reproduction in animals such as butterflies, mosquitoes, frogs, cats and dogs;	**S5LT-IIe-5**	
1.3. Plants 1.3.1 reproductive parts in plants 1.3.2 modes of reproduction in plants	how plants reproduce		6. describe the reproductive parts in plants and their functions;	**S5LT-IIf-6**	
			7. describe the different modes of reproduction in flowering and non-flowering plants such as moss, fern, mongo and others;	**S5LT-IIg-7**	
2. Ecosystems **2.1 Interactions Among Living Things** 2.1.1 Estuaries 2.1.2 Intertidal Zones	the interactions for survival among living and non-living things that take place in estuaries and intertidal zones	create a hypothetical community to show how organisms interact and reproduce to survive	8. discuss the interactions among living things and non-living things in estuaries and intertidal zones; and	**S5LT-IIh-8**	• BEAM – Grade 3 – Unit 3 – Plants (DLP-Science 3 DLP 37) • BEAM-Grade 3-Unit 3 – plants (DLP-Science 3 DLP39) • Learning Guide in Science and Health: Seed

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
			9. explain the need to protect and conserve estuaries and intertidal zones.	**S5LT-Ii-j-10**	Making parts of a flower • Learning Guide in Science and Health Parts of a Seed • Learning Guide in Science and Health: Growing Plants without Seeds
Grade 5 – Force and Motion **THIRD QUARTER/THIRD GRADING PERIOD**					
1. Motion **1.1 Measuring time and distance using standard units**	*The Learners demonstrate understanding of…* motion in terms of distance and time	*The Learners should be able …*	*The Learners should be able to…* 1. describe the motion of an object by tracing and measuring its change in position (distance travelled) over a period of time;	**S5FE-IIIa-1**	
			2. use appropriate measuring tools and correct standard units;	**S5FE-IIIb-2**	
2. Light and Sound, Heat and Electricity 2.1 Conductors of heat and electricity; 2.2 Effects of light and sound, heat and electricity	1. how different objects interact with light and sound, heat and electricity 2. the effects of heat and electricity, light and sound on people and objects		3. discuss why some materials are good conductors of heat and electricity;	**S5FE-IIIc-3**	
			4. infer how black and colored objects affect the ability to absorb heat;	**S5FE-IIId-4**	
			5. relate the ability of the material to block, absorb or transmit light to its use;	**S5FE-IIIe-5**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
3. Electricity and Magnetism 3.1 Circuits 3.2 Electromagnets	a simple DC circuit and the relationship between electricity and magnetism in electromagnets	propose an unusual tool or device using electromagnet that is useful for home school or community	6. infer the conditions necessary to make a bulb light up;	**S5FE-IIIf-6**	• BEAM-Grade 5 –Unit 5-Energy(Electro Magnets-Learning Guide Powered Attraction)
			7. determine the effects of changing the number or type of components in a circuit;	**S5FE-IIIg-7**	
			8. infer that electricity can be used to produce magnets; and	**S5FE-IIIh-8**	
			9. design an experiment to determine the factors that affect the strength of the electromagnet.	**S5FE-IIIi-j-9**	
Grade 5 – Earth and Space **FOURTH QUARTER/FOURTH GRADING PERIOD**					
1. Processes that Shape Earth's Surface **1.1 Weathering and Soil Erosion**	*The Learners demonstrate understanding of…* weathering and soil erosion shape the Earth's surface and affect living things and the environment	*The Learners should be able to…* participate in projects that reduce soil erosion in the community	*The Learners should be able to…* 1. describe how rocks turn into soil;	**S5FE-IVa-1**	• BEAM – Grade 4-Unit 7 – Earth(Learning Guide Soil Erosion) • Learning Guide in Science and Health: Rocks Around us • Learning Guide in Science and Health: Causes and Effect of Soil Erosion • Learning Guide in Science and Health: Let's Prevent Soil Erosion • Beam –Grade 4-Unit 7-Earth (DLP-Science 4 DLP 51-*52)*
			2. investigate extent of soil erosion in the community and its effects on living things and the environment;	**S5FE-IVb-2**	
			3. communicate the data collected from the investigation on soil erosion;	**S5FE-IVc-3**	

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CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
2. Weather Disturbances 2.1 Types of weather disturbances: 2.2 Effects of weather disturbances on living things and the environment.	weather disturbances and their effects on the environment.	prepares individual emergency kit.	4. observe the changes in the weather before, during and after a typhoon;	**S5FE-IVd-4**	
			5. describe the effects of a typhoon on the community;	**S5FE-IVe-5**	
			6. describe the effects of the winds, given a certain storm warning signal;	**S5FE-IVf-6**	
3. The Moon 3.1 Phases of the Moon 3.2 Beliefs and practices	the phases of the Moon and the beliefs and practices associated with it	debug local myths and folklore about the Moon and the Stars by presenting pieces of evidence to convince the community folks	7. infer the pattern in the changes in the appearance of the Moon;	**S5FE-IVg-h-7**	
			8. relate the cyclical pattern to the length of a month; and		
4.The Stars 4.1Patterns of stars (constellation)	constellations and the information derived from their location in the sky.		9. identify star patterns that can be seen at particular times of the year.	**S5FE-IVi-j-1**	

K to 12 BASIC EDUCATION CURRICULUM
GRADE 6

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 6 – Matter **FIRST QUARTER/FIRST GRADING PERIOD**					
Properties **1. Mixture and their Characteristics** 1.1 Homogenous and Heterogeneous mixtures	*The Learners demonstrate understanding of…* different types of mixtures and their characteristics	*The Learners should be able to…* prepare beneficial and useful mixtures such as drinks, food, and herbal medicines.	*The Learners should be able to…* 1. describe the appearance and uses uniform and non-uniform mixtures;	**S6MT-Ia-c-1**	
2. Separating Mixtures	different techniques to separate mixtures	separate desired materials from common and local products.	2. enumerate techniques in separating mixtures such as decantation, evaporation, filtering, sieving and using magnet; and	**S6MT-Id-f-2**	
			3. tell the benefits of separating mixtures from products in community.	**S6MT-Ig-j-3**	
Grade 6 – Living Things and Their Environment **SECOND QUARTER/SECOND GRADING PERIOD**					
I. Parts and Functions **1.Human Body Systems** 1.1 Musculo-skeletal 1.2 Integumentary System 1.3 Digestive System 1.4 Respiratory System	*The Learners demonstrate understanding of…* how the major organs of the human body work together to form organ systems	*The Learners should be able to…* make a chart showing healthful habits that promote proper functioning of the musculo-skeletal, integumentary, digestive, circulatory, excretory,	*The Learners should be able to…* 1. explain how the organs of each organ system work together;	**S6LT-IIa-b-1**	• BEAM – Grade 4- Unit 1- Human(Skeletal – Learning) • BEAM – Grade 4 Unit 1 – Human Muscular – DLP 5 • Learning Guide

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
1.5 Circulatory System 1.6 Nervous System		respiratory, and nervous systems	2. explain how the different organ systems work together;	**S6LT-IIc-d-2**	in Science and Health: The Kidneys and the Bladder • Learning Guide in Science and Health: The Circulatory System • Learning Guide in Science and Health: Bones in the Body
2.Animal **2.1 Vertebrates and Invertebrates**	the different characteristics of vertebrates and invertebrates	1. make an inventory of vertebrates and invertebrates that are commonly seen in the community 2. practice ways of caring and protecting animals	3. determine the distinguishing characteristics of vertebrates and invertebrates;	**S6MT-IIe-f-3**	• Learning Guide in Science: Two Major Groups of Animals • Learning Guide in Science and Health: Group of Invertebrates
3.Plants 3.1Reproduction of Non-flowering plants	how non-flowering plants reproduce	1. make a multimedia presentation on how parts of the reproductive system of spore-bearing and cone-bearing plants ensure their survival 2. make a flyer on how plants can be propagated vegetatively	4. distinguish how spore-bearing and cone-bearing plants reproduce;	**S6MT-IIg-h-4**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
II. Ecosystems **1.Interactions Among Living Things** **2.Tropical rainforests** **2.1Coral reefs** **2.2 Mangrove swamps**	the interactions for survival among living and non-living things that take place in tropical rainforests, coral reefs, and mangrove swamps	form discussion groups to tackle issues involving protection and conservation of ecosystems that serve as nurseries, breeding places, and habitats for economically important plants and animals	5. discuss the interactions among living things and non-living things in tropical rainforests, coral reefs and mangrove swamps; and	**S6MT-IIi-j-5**	• Learning Guide Science and Health: There is no Place Like Home
			6. explain the need to protect and conserve tropical rainforests, coral reefs and mangrove swamps.	**S6MT-IIk-l-6**	
Grade 6 – Force, Motion and Energy **THIRD QUARTER/THIRD GRADING PERIOD**					
1. Gravitation and Frictional Forces	*The Learners demonstrate understanding of…* gravity and friction affect movement of objects	*The Learners should be able to…* produce an advertisement demonstrates road safety.	*The Learners should be able to…* 1. infer how friction and gravity affect movements of different objects;	**S6FE-IIIa-b-1**	
2.Energy 2.1Energy transformation in simple machines	how energy is transformed in simple machines	create a marketing strategy for a new product on electrical or light efficiency	2. demonstrate how sound, heat, light and electricity can be transformed;	**S6FE-IIIc-d-2**	• Learning Guide in Science and Health: Safety with Machines
			3. manipulate simple machines to describe their characteristics and uses; and	**S6FE-IIIe-f-1**	
			4. demonstrate the practical and safe uses of simple machines.	**S6FE-IIIa-1**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 6 – Earth and Space **FOURTH QUARTER/FOURTH GRADING PERIOD**					
1. Forces that affect changes on the earth's surface **1.1 Earthquakes** **1.2 Volcanic Eruption**	*The Learners demonstrate understanding of…* the effects of earthquakes and volcanic eruptions:	*The Learners should …* design an emergency and preparedness plan and kit	*The Learners should be able to…* 1. describe the changes on the Earth's surface as a result of earthquakes and volcanic eruptions;	**S6ES-IVa-1**	• Learning Guide in Science and Health: Active or Inactive
			2. enumerate what to do before, during and after earthquake and volcanic eruptions;	**S6ES-IVb-2**	
2.Weather Patterns in the Philippines 2.1Weather patterns and Seasons in the Philippines.	weather patterns and seasons in the Philippines:		3. describe the different seasons in the Philippines;	**S6ES-IVc-3**	
			4. discuss appropriate activities for specific seasons of the Philippines;	**S6ES-IVd-4**	
3.Motions of the Earth 3.1Rotation and revolution	of the earth's rotation and revolution:		5. demonstrate rotation and revolution of the Earth using a globe to explain day and night and the sequence of seasons;	**S6ES-IVe-f-5**	• BEAM – Grade 4 – Unit 9 – Earth, Moon and Sun (DLP – Science 4 DLP 60)
4.The Solar System 4.1Planets	characteristics of planets in the solar system.		6. compare the planets of the solar system; and	**S6ES-IVg-h-6**	• BEAM-Grade 4 – Unit 9 – Earth, Moon and Sun • (DLP – Science 4 – DLP59) • BEAM –Grade 4 Unit 9 – Earth, Moon and Sun (DLP –Science 4 DLP 60)
			7. construct a model of the solar system showing the relative sizes of the planets and their relative distances from the Sun.	**S6ES-IVi-j-7**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 7 – Matter **FIRST QUARTER/FIRST GRADING PERIOD**					
Doing Scientific Investigations 1. Ways of acquiring knowledge and solving problems	*The Learners demonstrate an understanding of*: scientific ways of acquiring knowledge and solving problems	*The Learners shall be able to:* perform in groups in guided investigations involving community-based problems using locally available materials	*The Learners should be able to…* 1. describe the components of a scientific investigation;	**S7MT-Ia-1**	
2. Diversity of Materials in the Environment 2.1 Solutions	some important properties of solutions	prepare different concentrations of mixtures according to uses and availability of materials	2. investigate properties of unsaturated or saturated solutions;	**S7MT-Ic-2**	
			3. express concentrations of solutions quantitatively by preparing different concentrations of mixtures according to uses and availability of materials;	**S7MT-Id-3**	
2.2 Substances and Mixtures	the properties of substances that distinguish them from mixtures	investigate the properties of mixtures of varying concentrations using available materials in the community for specific purposes	4. distinguish mixtures from substances based on a set of properties;	**S7MT-Ie-f-4**	
2.3 Elements and Compounds	classifying substances as elements or compounds	make a chart, poster, or multimedia presentation of common elements showing their names, symbols, and uses	5. recognize that substances are classified into elements and compounds;	**S7MT-Ig-h-5**	
2.4 Acids and Bases	the common properties of acidic and basic mixtures	properly interpret product labels of acidic and basic mixture, and practice safe ways of	6. investigate properties of acidic and basic mixtures using natural indicators; and	**S7MT-Ii-6**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
		handling acids and bases using protective clothing and safety gear			
2.5 Metals and Non-metals	properties of metals and nonmetals		7. describe some properties of metals and non-metals such as luster, malleability, ductility, and conductivity.	**S7MT-Ij-7**	
Grade 7 – Living Things and Their Environment SECOND QUARTER/SECOND GRADING PERIOD					
I. Parts and Functions 1. Microscopy	*The Learners demonstrate an understanding of:* the parts and functions of the compound microscope	*The Learners should be able to:* employ appropriate techniques using the compound microscope to gather data about very small objects	*The Learners should be able to…* 1. Identify parts of the microscope and their functions;	**S7LT-IIa-1**	• BEAM: Tools used in the Development of Biology & Biotechnology Tools in Biology
			2. focus specimens using the compound microscope;	**S7LT-IIb-2**	
2. Levels of Biological Organization	the different levels of biological organization		3. describe the different levels of biological organization from cell to biosphere;	**S7LT-IIc-3**	
3. Animal and Plant Cells	the difference between animal and plant cells		4. differentiate plant and animal cells according to presence or absence of certain organelles;	**S7LT-IId-4**	• BEAM: The Basic Unit of Life
			5. explain why the cell is considered the basic structural and functional unit of all organisms;	**S7LT-IIe-5**	
4. Fungi, Protists, and Bacteria	organisms that can only be seen through the microscope, many of which consist of only one cell		6. identify beneficial and harmful microorganisms;	**S7LT-IIf-6**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
II. Heredity: Inheritance and Variation 1. Asexual reproduction 2. Sexual reproduction	reproduction being both asexual or sexual		7. differentiate asexual from sexual reproduction in terms of: 7. 1 number of individuals involved; 7. 2 similarities of offspring to parents;	**S7LT-IIg-7**	
			8. describe the process of fertilization;	**S7LT-IIg-8**	
II. Ecosystems 1. Components of an ecosystem 2. Ecological relationships 2.1 Symbiotic relationships 2.2 Non symbiotic relationships 3. Transfer of energy through trophic levels	organisms interacting with each other and with their environment to survive	conduct a collaborative action to preserve the ecosystem in the locality	9. differentiate biotic from abiotic components of an ecosystem;	**S7LT-IIh-9**	
			10. describe the different ecological relationships found in an ecosystem;	**S7LT-IIh-10**	
			11. predict the effect of changes in one population on other populations in the ecosystem; and	**S7LT-IIi-11**	
			12. predict the effect of changes in abiotic factors on the ecosystem.	**S7LT-IIj-12**	
Grade 7 – Force, Motion and, Energy **THIRD QUARTER/THIRD GRADING PERIOD**					
I. Motion in One Dimension 1. Descriptors of Motion 1.1 Distance or Displacement 1.2 Speed or Velocity 1.3 Acceleration 2. Motion Detectors	*The Learners demonstrate an understanding of:* motion in one dimension	*The Learners shall be able to:* conduct a forum on mitigation and disaster risk reduction	*The Learners should be able to…* 1. describe the motion of an object in terms of distance or displacement, speed or velocity, and acceleration;	**S7FE-IIIa-1**	
			2. differentiate quantities in terms of magnitude and direction;	**S7FE-IIIa-2**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
			3. create and interpret visual representation of the motion of objects such as tape charts and motion graphs;	**S7FE-IIIb-3**	
II. Waves 1. Types of Waves 2. Characteristics of Waves 2.1 Amplitude 2.2 Wavelength 3. Wave Velocity	waves as a carriers of energy		4. infer that waves carry energy;	**S7LT-IIIc-4**	
			5. differentiate transverse from longitudinal waves, and mechanical from electromagnetic waves;	**S7LT-IIIc-5**	
			6. relate the characteristics of waves;	**S7LT-IIId-6**	
III. Sound 1. Characteristics of sound 1.1.Pitch 1.2 Loudness 1.3 Quality	the characteristics of sound		7. describe the characteristics of sound using the concepts of wavelength, velocity, and amplitude ;	**S7LT-IIId-7**	
			8. explain sound production in the human voice box, and how pitch, loudness, and quality of sound vary from one person to another;	**S7LT-IIIe-8**	
			9. describe how organisms produce, transmit, and receive sound of various frequencies (infrasonic, audible, and ultrasonic sound);	**S7LT-IIIe-9**	
IV. Light 1. Characteristics of Light 1.1 Intensity or Brightness 1.2 Color	the characteristics of light	suggest proper lighting in various activities	10. relate characteristics of light such as color and intensity to frequency and wavelength;	**S7LT-IIIf-10**	
			11. infer that light travels in a straight line;	**S7LT-IIIg-11**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
V. Heat 1. Heat Transfer 1.1 Conduction 1.2 Convection 1.3 Radiation	how heat is transferred		12. infer the conditions necessary for heat transfer to occur;	**S7LT-IIIh-i-12**	
VI. Electricity 1. Charges 2. Charging processes	charges and the different charging processes		13. describe the different types of charging processes; and	**S7LT-IIIj-13**	
			14. explain the importance of earthing or grounding.	**S7LT-IIIj-14**	
Grade 7 – Earth and Space **FOURTH QUARTER/FOURTH GRADING PERIOD**					
1.The Philippine Environment 1.1 Location of the Philippines using a coordinate system 1.2. Location of the Philippines with respect to landmasses and bodies of water 1.3. Protection and conservation of natural resources	*The Learners demonstrate an understanding of*: the relation of geographical location of the Philippines to its environment	*The Learners shall be able to:* analyze the advantage of the location of the Philippines in relation to the climate, weather, and seasons	*The Learners should be able to…* 1. demonstrate how places on Earth may be located using a coordinate system;	**S7ES-IVa-1**	
			2. describe the location of the Philippines with respect to the continents and oceans of the world;	**S7ES-IVa-2**	
			3. recognize that soil, water, rocks, coal, and other fossil fuels are Earth materials that people use as resources;	**S7ES-IVb-3**	
			4. describe ways of using Earth's resources sustainably;	**S7ES-IVb-4**	
2.Interactions in the Atmosphere 2.1. Greenhouse effect and global warming 2.3. Land and sea breezes 2.4. Monsoons 2.5. Intertropical convergence zone	the different phenomena that occur in the atmosphere		5. discuss how energy from the Sun interacts with the layers of the atmosphere;	**S7ES-IVd-5**	
			6. explain how some human activities affect the atmosphere ;	**S7ES-IVd-6**	
			7. account for the occurrence of land and sea breezes, monsoons, and intertropical convergence zone	**S7ES-IVe-7**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
			(ITCZ)		
			8. describe the effects of certain weather systems in the Philippines;	**S7ES-IVe-8**	
3. Seasons in the Philippines 3.1. Relation of seasons to the position of the Sun in the sky 3.2. Causes of seasons in the Philippines	the relationship of the seasons and the position of the Sun in the sky		9. using models, relate: 9.1 the tilt of the Earth to the length of daytime; 9.2 the length of daytime to the amount of energy received; 9.3 the position of the Earth in its orbit to the height of the Sun in the sky; 9.4 the height of the Sun in the sky to the amount of energy received; 9.5 the latitude of an area to the amount of energy the area receives;	**S7ES-IVe-9** **S7ES-IVe-10**	
			10. show what causes change in the seasons in the Philippines using models;	**S7ES-IVi-11**	
4. Eclipses 4.1. Solar Eclipse 4.2. Lunar Eclipse	the occurrence of eclipses		11. explain how solar and lunar eclipses occur; and	**S7ES-IVj-12**	
			12. collect, record, and report data on the beliefs and practices of the community in relation to eclipses.	**S7ES-IVj-13**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 8 – Force, Motion, and Energy **FIRST QUARTER/FIRST GRADING PERIOD**					
1. Laws of Motion 1.1 Law of Inertia 1.2 Law of Acceleration 1.3 Law of Interaction	*The Learners demonstrate an understanding of*: Newton's three laws of motion and uniform circular motion	*The Learners shall be able to:* develop a written plan and implement a "Newton's Olympics"	*The Learners should be able to…* 1. investigate the relationship between the amount of force applied and the mass of the object to the amount of change in the object's motion;	**S8FE-Ia-15**	
			2. infer that when a body exerts a force on another, an equal amount of force is exerted back on it;	**S8FE-Ia-16**	
			3. demonstrate how a body responds to changes in motion;	**S8FE-Ib-17**	
			4. relate the laws of motion to bodies in uniform circular motion;	**S8FE-Ib-18**	
			5. infer that circular motion requires the application of constant force directed toward the center of the circle;	**S8FE-Ib-19**	
2. Work Power and Energy	work using constant force, power, gravitational potential energy, kinetic energy, and elastic potential energy		6. identify situations in which work is done and in which no work is done;	**S8FE-Ic-20**	
			7. describe how work is related to power and energy;	**S8FE-Ic-21**	
			8. differentiate potential and kinetic energy;	**S8FE-Id-22**	
			9. relate speed and position of object to the amount of	**S8FE-Id-23**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
			energy possessed by a body;		
3. Sound	the propagation of sound through solid, liquid, and gas		10. infer how the movement of particles of an object affects the speed of sound through it;	**S8FE-Ie-24**	
			11. investigates the effect of temperature to speed of sound through fair testing;	**S8FE-Ie-25**	
4. Light	some properties and characteristics of visible light	discuss phenomena such as blue sky, rainbow, and red sunset using the concept of wavelength and frequency of visible light	12. demonstrate the existence of the color components of visible light using a prism or diffraction grating;	**S8FE-If-26**	
			13. explain the hierarchy of colors in relation to energy;	**S8FE-If-27**	
			14. explain that red is the least bent and violet the most bent according to their wavelengths or frequencies;	**S8FE-If-28**	
5. Heat	heat and temperature, and the effects of heat on the body		15. differentiate between heat and temperature at the molecular level;	**S8FE-Ig-29**	
6. Electricity	current- voltage-resistance relationship, electric power, electric energy, and home circuitry		16. infer the relationship between current and charge;	**S8FE-Ih-30**	
			17. explain the advantages and disadvantages of series and parallel connections in homes;	**S8FE-Ii-31**	
			18. differentiate electrical power and electrical energy; and	**S9FE-Ii-32**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
			19. explain the functions of circuit breakers, fuses, earthing, double insulation, and other safety devices in the home.	**S8FE-Ii-33**	
Grade 8 – Earth and Space **SECOND QUARTER/ SECOND GRADING PERIOD**					
1. Earthquakes and Faults 1.1 Active and inactive faults 1.2 How movements along faults generate earthquakes 1.3 How earthquakes generate tsunamis 1.4 Earthquake focus and epicenter 1.5 Earthquake intensity and magnitude 1.6 Earthquake preparedness 1.7 How earthquake waves provide information about the interior of the Earth	*The Learners demonstrate an understanding of:* the relationship between faults and earthquakes	*The Learners shall be able to:* 1. participate in decision making on where to build structures based on knowledge of the location of active faults in the community 2. make an emergency plan and prepare an emergency kit for use at home and in school	*The Learners should be able to…* 1. using models or illustrations, explain how movements along faults generate earthquakes;	**S8ES-IIa-14**	
			2. differentiate the 2.1 epicenter of an earthquake from its focus; 2.2 intensity of an earthquake from its magnitude; 2.3 active and inactive faults;	**S8ES-IIa-15**	
			3. demonstrate how underwater earthquakes generate tsunamis;	**S8ES-IIb-16**	
			4. explain how earthquake waves provide information about the interior of the earth	**S8ES-IIc-17**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
2. Understanding Typhoons 2.1 How typhoons develop 2.2 Why the Philippines is prone to typhoons 2.3 How landforms and bodies of water affect typhoons within the Philippine Area of Responsibility (PAR)	the formation of typhoons and their movement within the PAR	1. demonstrate precautionary measures before, during, and after a typhoon, including following advisories, storm signals, and calls for evacuation given by government agencies in charge	5. explain how typhoons develop;	**S8ES-IId-18**	
			6. infer why the Philippines is prone to typhoons;	**S8ES-IId-19**	
		2. participate in activities that lessen the risks brought by typhoons	7. explain how landmasses and bodies of water affect typhoons;	**S8ES-IIe-20**	
			8. trace the path of typhoons that enter the Philippine Area of Responsibility (PAR) using a map and tracking data;	**S8ES-IIf-21**	
3. Other members of the Solar System 3.1 Comets 3.2 Meteors 3.3 Asteroids	characteristics of comets, meteors, and asteroids	discuss whether or not beliefs and practices about comets and meteors have scientific basis	9. compare and contrast comets, meteors, and asteroids;	**S8ES-IIg-22**	
			10. predict the appearance of comets based on recorded data of previous appearances; and	**S8ES-IIh-23**	
			11. explain the regular occurrence of meteor showers	**S8ES-IIi-j-24**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 8 – Matter **THIRD QUARTER/THIRD GRADING PERIOD**					
1. The Particle Nature of Matter 1.1 Elements, Compounds, and Mixtures 1.2 Atoms and Molecules	*The Learners demonstrate an understanding of:* the particle nature of matter as basis for explaining properties, physical changes, and structure of substances and mixtures	*The Learners shall be able to:* present how water behaves in its different states within the water cycle	*The Learners should be able to…* 1. explain the properties of solids, liquids, and gases based on the particle nature of matter;	**S8MT-IIIa-b-8**	
			2. explain physical changes in terms of the arrangement and motion of atoms and molecules;	**S8MT-IIIc-d-9**	
2. Atomic Structure 2.1 Protons 2.2 Neutrons 2.3 Electrons	the identity of a substance according to its atomic structure		3. determine the number of protons, neutrons, and electrons in a particular atom;	**S8MT-IIIe-f-10**	
3. Periodic Table (PT) of Elements 3.1 Development of the PT 3.2 Arrangement of elements 3.3 Reactive and nonreactive metals	the periodic table of elements as an organizing tool to determine the chemical properties of elements		4. trace the development of the periodic table from observations based on similarities in properties of elements; and	**S8MT-IIIg-h-11**	
			5. use the periodic table to predict the chemical behaviour of an element.	**S8MT-IIIi-j-12**	
Grade 8 – Living Things and Their Environment **FOURTH QUARTER/ FOURTH GRADING PERIOD**					
1. Structures and Functions: Focus on the Digestive System **1.1 Organs of the digestive system and their interaction with organs of the respiratory, circulatory, and**	*The Learners demonstrate an understanding of:* 1. the digestive system and its interaction with the circulatory, respiratory, and excretory systems in	*The Learners should be able to:* present an analysis of the data gathered on diseases resulting from nutrient deficiency	*The Learners should be able to…* 1. explain ingestion, absorption, assimilation, and excretion;	**S8LT-IVa-13**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
excretory systems **1.2 Changes in food as it undergoes physical and chemical digestion** **1.3 Diseases resulting from nutrient deficiency and ingestion of harmful substances** **1.4 Prevention, detection, and treatment of diseases of the digestive system**	providing the body with nutrients for energy 2. diseases that result from nutrient deficiency and ingestion of harmful substances, and their prevention and treatment		2. explain how diseases of the digestive system are prevented, detected, and treated;	**S8LT-IVb-14**	
			3. identify healthful practices that affect the digestive system;	**S8LT-IVc-15**	
2. Heredity: Inheritance and Variation of Traits **2.1 Stages of mitosis** **2.2 Stages of meiosis** **2.3 Mendelian Genetics**	1. how cells divide to produce new cells 2. meiosis as one of the processes producing genetic variations of the Mendelian Pattern of Inheritance	report on the importance of variation in plant and animal breeding	4. compare mitosis and meiosis, and their role in the cell-division cycle;	**S8LT-IVd-16**	• BEAM: Cell Growth & Reproduction
			5. explain the significance of meiosis in maintaining the chromosome number;	**S8LT-IVe-17**	• BEAM: Link to your Past
			6. predict phenotypic expressions of traits following simple patterns of inheritance;	**S8LT-IVf-18**	
3. Biodiversity **3.1 Species diversity** **3.2 Hierarchical taxonomic system of classification** **3.3 Protection and conservation**	1. the concept of a species 2. the species as being further classified into a hierarchical taxonomic	report (e.g., through a travelogue) on the activities that communities engage in to protect and conserve endangered and	7. explain the concept of a species;	**S8LT-IVg-19**	
			8. classify organisms using the hierarchical taxonomic system;	**S8LT-IVh-20**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
of endangered and economically important species	system	economically important species	9. explain the advantage of high biodiversity in maintaining the stability of an ecosystem;	**S8LT-IVh-21**	
4. Ecosystems **4.1 Transfer of Energy in Trophic Levels** **4.2 Cycling of materials in the ecosystem** 4.2.1Water cycle 4.2.2Oxygen-carbon cycle 4.2.3Nitrogen cycle **4.3 Impact of human activities in an ecosystem**	the one-way flow of energy and the cycling of materials in an ecosystem	make a poster comparing food choices based on the trophic levels	10. describe the transfer of energy through the trophic levels;	**S8LT-IVi-22**	
			11. analyze the roles of organisms in the cycling of materials;	**S8LT-IVi-23**	
			12. explain how materials cycle in an ecosystem; and	**S8LT-IVi-24**	
			13.suggest ways to minimize human impact on the environment.	**S8LT-IVj-25**	

K to 12 BASIC EDUCATION CURRICULUM
GRADE 9

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 9 – Living Things and Their Environment **FIRST QUARTER/ FIRST GRADING PERIOD**					
1. Respiratory and Circulatory Systems Working with the other Organ Systems	*The Learners demonstrate an understanding of:* 1. how the different structures of the circulatory and respiratory systems work together to transport oxygen-rich blood and nutrients to the different parts of the body 2. the prevention, detection, and treatment of diseases affecting the circulatory and respiratory systems	*The Learners should be able to:* conduct an information dissemination activity on effective ways of taking care of the respiratory and circulatory systems based on data gathered from the school or local health workers	*The Learners should be able to…* 1. explain how the respiratory and circulatory systems work together to transport nutrients, gases, and other molecules to and from the different parts of the body;	**S9LT-Ia-b-26**	• BEAM: Second Year – Biology Organ System - Circulatory System • EASEBiology M11 Energy Producing & Distributing Systems Lessons 2 & 3
			2. infer how one's lifestyle can affect the functioning of respiratory and circulatory systems;	**S9LT-Ic-27**	• APEXBiology Unit IV The Organ Systems Lessons 11 & 12
2. Heredity: Inheritance and Variation 2.1 Location of genes on chromosomes 2.2 Non-Mendelian inheritance 2.2.1 Incomplete dominance 2.2.2 Sex-linked traits 2.2.3 Multiple alleles 2.3 Multiple genes	1. how genetic information is organized in genes on chromosomes 2. the different patterns of inheritance		3. describe the location of genes in chromosomes;	**S9LT-Id-28**	• BEAM: Second Year – Your Genetic Book of Life • APEXUnit 6 Genetics Lesson 3 The Structure of DNA
			4. explain the different patterns of non-Mendelian inheritance ;	**S9LT-Id-29**	• EASE Biology Module14 Lesson 3

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
3. Biodiversity and Evolution **3.1 Causes of Species Extinction** 3.1.1 natural 3.1.2 anthropogenic	how changes in the environment may affect species extinction	make a multimedia presentation of a timeline of extinction of representative microorganisms, plants, and animals	5. relate species extinction to the failure of populations of organisms to adapt to abrupt changes in the environment; and	**S9LT-Ie-f-30**	
4. Ecosystems **4.1 Flow of Energy and Matter in Ecosystems** 4.1.1 Photosynthesis 4.1.2 Respiration	1. the structure and function of plant parts and organelles involved in photosynthesis 2. the structure and function of mitochondrion as the main organelle involved in respiration	design and conduct an investigation to provide evidence that plants can manufacture their own food	6. differentiate basic features and importance of photosynthesis and respiration.	**S9LT-Ig-j-31**	• BEAMLearning Guide Biology Food for Life • BEAMLearning Guide Biology Creating Energy for Life • EASEBiology Module 4 Photosynthesis • EASE Biology Module 5 Cellular Respiration • APEXBiology Unit 3 Life Energy
Grade 9 – Matter **SECOND QUARTER/SECOND GRADING PERIOD**					
1. Chemical Bonding 1.1 Ionic and Covalent Bonding 1.2 Metallic Bonding	*The Learners demonstrate an understanding of…* 1. how atoms combine with other atoms by transferring or by sharing electrons 2. forces that hold metals together	*The Learners shall be able to:*	*The Learners should be able to…* 1. explain the formation of ionic and covalent bonds; 2. recognize different types of compounds (ionic or covalent) based on their properties such as melting point, hardness, polarity, and electrical and thermal conductivity;	**S9MT-IIa-13** **S9MT-IIb-14**	• EASEChemistry Module 14 The Chemical Bonds Lesson 1 • BEAMYear 3 Module 3 Metallic Link • EASEChemistry Module 14 The Chemical Bonds Lesson 1

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
			3. explain properties of metals in terms of their structure;	**S9MT-IIc-d-15**	
			4. explain how ions are formed;	**S9MT-IIe-f-16**	
2. The Variety of Carbon Compounds 2.1 Carbon Atoms 2.2 Organic Compounds	the type of bonds that carbon forms that result in the diversity of carbon compounds		5. explain how the structure of the carbon atom affects the type of bonds it forms;	**S9MT-IIg-17**	
			6. recognize the general classes and uses of organic compounds;	**S9MT-IIh-18**	
3. Mole Concept 3.1 Mass 3.2 Moles 3.3 Percentage Composition of a Compound	the unit, **mole**, that quantitatively measures the number of very small particles of matter	analyze the percentage composition of different brands of two food products and decide on the products' appropriate percentage composition	7. use the mole concept to express mass of substances; and	**S9MT-IIi-19**	• EASEChemistry Module 16 Stoichiometry
			8. determine the percentage composition of a compound given its chemical formula and vice versa.	**S9MT-IIj-20**	
Grade 9 – Earth and Space **THIRD QUARTER/THIRD GRADING PERIOD**					
1.Volcanoes 1.1 Type of volcanoes 1.2 Volcanic Eruption 1.3 Energy from volcanoes	*The Learners demonstrate an understanding of:* volcanoes found in the Philippines	*The Learners shall be able to:*	*The Learners should be able to…* 1. describe the different types of volcanoes;	**S9ES -IIIa-25**	• EASEIntegrated Science I Module 12 Inside the Solid Earth
			2. differentiate between active and inactive volcanoes;	**S9ES -IIIa-27**	
			3. explain what happens when volcanoes erupt ;	**S9ES -IIIb-28**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
			4. illustrate how energy from volcanoes may be tapped for human use;	**S9ES –IIIc-d-29**	
2.Climate 2.1 Factors that affect climate 2.2 Global climate phenomenon	factors that affect climate, and the effects of changing climate and how to adapt accordingly	participate in activities that reduce risks and lessen effects of climate change	5. explain how different factors affect the climate of an area;	**S9ES-IIIe-30**	
			6. describe certain climatic phenomena that occur on a global level;	**S9ES-IIIf-31**	
3. Constellations 3.1 Characteristics of stars 3.2 Arrangement of stars in a group 3.3 Changing position of constellations during the night and at different times of the year 3.4 Beliefs and practices about constellations and astrology	the relationship between the visible constellations in the sky and Earth's position along its orbit	discuss whether or not popular beliefs and practices with regard to constellations and astrology have scientific basis	7. infer the characteristics of stars based on the characteristics of the Sun;	**S9ES-IIIg-32**	• EASEIntegrated Science 1 Module 18
			8. infer that the arrangement of stars in a group (constellation) does not change;	**S9ES-IIIh-33**	
			9. observe that the position of a constellation changes in the course of a night; and	**S9ES-IIIi-34**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
			10. show which constellations may be observed at different times of the year using models.	**S9ES-IIIj-35**	
Grade 9 – Force, Motion, and Energy **FOURTH QUARTER/FOURTH GRADING PERIOD**					
Motion in Two Dimensions 1. Projectile Motion 1.2. Impulse, Momentum and Impulse 1.3. Conservation of Linear Momentum	*The Learners demonstrate an understanding of:* projectile motion, impulse and momentum, and conservation of linear momentum	*The Learners shall be able to:* propose ways to enhance sports related to projectile motion	*The Learners should be able to…* 1. describe the horizontal and vertical motions of a projectile;	**S9FE-IVa-34**	• APEX Physics Unit 3 Chapter 1 LP 4 Falling Bodies • BEAMLearning Guide Physics-4th Year Energy in Transportation Put It into Motion • APEXPhysics Unit 3 Chapter 1 LP 10 Momentum
			2. investigate the relationship between the angle of release and the height and range of the projectile;	**S9FE-IVa-35**	
			3. relate impulse and momentum to collision of objects (e.g., vehicular collision);	**S9FE-IVb-36**	
			4. infer that the total momentum before and after collision is equal;	**S9FE-IVb-37**	
			5. examine effects and predict causes of collision-related damages/injuries;	**S9FE-IVc-38**	
2. Work Power and Energy 2.1 Changes in form of mechanical energy	conservation of mechanical energy	create a device that shows conservation of mechanical energy	6. explain energy transformation in various activities/events (e.g., waterfalls, archery, amusement rides);	**S9FE-IVc-39**	• APEXPhysics Unit 3 Chapter 1 LP 12 Law of

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
2.2 Conservation of energy			7. perform activities to demonstrate conservation of mechanical energy;	**S9FE-IVd-40**	Conservation of Energy
			8. infer that the total mechanical energy remains the same during any process;	**S9FE-IVe-41**	
3. Heat, Work, and Efficiency	the relationship among heat, work, and efficiency	analyze how power plants generate and transmit electrical energy	9. construct a model to demonstrate that heat can do work;	**S9FE-IVe-42**	• APEXPhysics Unit 3 Chapter 2 LP 1 Heat Engines • BEAM Learning Guide 4th Year Physics Force, Power, Work and Energy Mode Swing
			10. infer that heat transfer can be used to do work, and that work involves the release of heat;	**S9FE-IVf-43**	
			11. explain why machines are never 100-percent efficient;	**S9FE-IVf-44**	
			12. explain how heat transfer and energy transformation make heat engines like geothermal plants work; and	**S9FE-IVg-45**	
4. Electricity and magnetism 4.1 Power generation and energy losses 4.2 Transmission and distribution of electrical energy from power plants to homes	generation, transmission, and distribution of electrical energy from power plants (hydroelectric, geothermal, wind, nuclear) to home		13. explain how electrical energy is generated, transmitted, and distributed.	**S9FE-IVh-j-46**	• BEAMLearning Guide Year 4 Science Electrical Energy Generation, Transmission and Use

K to 12 BASIC EDUCATION CURRICULUM
GRADE 10

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 10 – Earth and Space **FIRST QUARTER/FIRST GRADING PERIOD**					
1. Plate Tectonics 1.1 Distribution 1.1.1 volcanoes 1.1.2 earthquake epicenters 1.1.3 mountain ranges 1.2 Plate boundaries 1.3 Processes and landforms along plate boundaries 1.4 Internal structure of the Earth 1.5 Mechanism (possible causes of movement) 1.6 Evidence of plate movement	*The Learners demonstrate an understanding of*: the relationship among the locations of volcanoes, earthquake epicenters, and mountain ranges	*The Learners shall be able to:* 1. demonstrate ways to ensure disaster preparedness during earthquakes, tsunamis, and volcanic eruptions 2. suggest ways by which he/she can contribute to government efforts in reducing damage due to earthquakes, tsunamis, and volcanic eruptions	*The Learners should be able to…* 1. describe the distribution of active volcanoes, earthquake epicenters, and major mountain belts;	**S9ES –Ia-j-36.1**	• APEX Integrated Science LP (UNIT 5-Changes in the Environment)
			2. describe the different types of plate boundaries;	**S9ES –Ia-j-36.2**	
			3. explain the different processes that occur along the plate boundaries;	**S9ES –Ia-j-36.3**	
			4. describe the internal structure of the Earth;	**S9ES –Ia-j-36.4**	
			5. describe the possible causes of plate movement; and	**S9ES –Ia-j-36.5**	
			6. enumerate the lines of evidence that support plate movement	**S9ES –Ia-j-36.6**	
Grade 10 – Force, Motion and, Energy **SECOND QUARTER/SECOND GRADING PERIOD**					
1. Electromagnetic Spectrum	*The Learners demonstrate an understanding of:* the different regions of the electromagnetic spectrum	*The Learners shall be able to:*	*The Learners should be able to…* 1. compare the relative wavelengths of different forms of electromagnetic waves;	**S10FE-IIa-b-47**	• APEXPhysics LP Unit 4 Chapter 3: Lesson 3.3-3.9 Electromagnetic Waves

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
			2. cite examples of practical applications of the different regions of EM waves, such as the use of radio waves in telecommunications;	**S10FE-IIc-d-48**	
			3. explain the effects of EM radiation on living things and the environment;	**S10FE-IIe-f-49**	
2. Light **2.1 Reflection of Light in Mirrors** **2.2 Refraction of Light in Lenses**	the images formed by the different types of mirrors and lenses		4. predict the qualitative characteristics (orientation, type, and magnification) of images formed by plane and curved mirrors and lenses;	**S10FE-IIg-50**	• APEX Physics LP Unit I Chapter 1 Lessons 2-8 Plane and Curve Mirrors
			5. apply ray diagramming techniques in describing the characteristics and positions of images formed by lenses;	**S10FE-IIg-51**	• APEX Physics LP Unit I Chapter 1 Lessons 11-13 Image Formation & Locating Images in Lenses
			6. identify ways in which the properties of mirrors and lenses determine their use in optical instruments (e.g., cameras and binoculars);	**S10FE-IIh-52**	• APEXPhysics LP Unit I Chapter 1 Lesson 1 Optical Instruments
3. Electricity and Magnetism 3.1 Electromagnetic effects	the relationship between electricity and magnetism in electric motors and generators		7. demonstrate the generation of electricity by movement of a magnet through a coil; and	**S10FE-IIi-53**	• APEX Physics LP Unit 2 Chapter 2 Electromagnetic Energy
			8. explain the operation of a simple electric motor and generator.	**S10FE-IIj-54**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
Grade 10 – Living Things and Their Environment THIRD QUARTER/THIRD GRADING PERIOD					
1. Coordinated Functions of the Reproductive, Endocrine, and Nervous Systems	*The Learners demonstrate an understanding of:* 1. organisms as having feedback mechanisms, which are coordinated by the nervous and endocrine systems 2. how these feedback mechanisms help the organism maintain homeostasis to reproduce and survive	*The Learners should be able to:*	*The Learners should be able to…* 1. describe the parts of the reproductive system and their functions;	**S10LT-IIIa-33**	• APEX Biology Unit 5 Life Reproduction Lessons 5-8 Male and Reproduction and Fertility • APEXBiology Unit 4 The Organ Systems Lessons 14&15 Endocrine & Nervous Systems
			2. explain the role of hormones involved in the female and male reproductive systems;	**S10LT-IIIb-34**	
			3. describe the feedback mechanisms involved in regulating processes in the female reproductive system (e.g., menstrual cycle);	**S10LT-IIIc-35**	
			4. describe how the nervous system coordinates and regulates these feedback mechanisms to maintain homeostasis;	**S10LT-IIIc-36**	
2. Heredity: Inheritance and Variation	1. the information stored in DNA as being used to make proteins 2. how changes in a DNA molecule may cause changes in its product 3. mutations that occur in sex cells as being heritable		5. explain how protein is made using information from DNA;	**S10LT-IIId-37**	• APEX Biology Unit 6 Anatomy of Genes Lessons 1-5 Heredity and Genetics
			6. explain how mutations may cause changes in the structure and function of a protein;	**S10LT-IIIe-38**	

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
3. Biodiversity and Evolution	how evolution through natural selection can result in biodiversity	write an essay on the importance of adaptation as a mechanism for the survival of a species	7. explain how fossil records, comparative anatomy, and genetic information provide evidence for evolution;	**S10LT-IIIf-39**	• APEXBiology Unit 7 Evolution Lessons 1-4
			8. explain the occurrence of evolution;	**S10LT-IIIg-40**	
4. Ecosystems **4.1 Flow of Energy and Matter in Ecosystems** **4.2 Biodiversity and Stability** **4.3 Population Growth and Carrying Capacity**	1. the influence of biodiversity on the stability of ecosystems 2. an ecosystem as being capable of supporting a limited number of organisms		9. explain how species diversity increases the probability of adaptation and survival of organisms in changing environments;	**S10LT-IIIh-41**	
			10. explain the relationship between population growth and carrying capacity; and	**S10LT-IIIi-42**	
			11. suggest ways to minimize human impact on the environment.	**S10LT-IIIj-43**	
Grade 10 – Matter **FOURTH QUARTER/FOURTH GRADING PERIOD**					
1. Gas Laws 1.1 Kinetic Molecular Theory 1.2 Volume, pressure, and temperature relationship 1.3 Ideal gas law	*The Learners demonstrate an understanding of…* how gases behave based on the motion and relative distances between gas particles	*The Learners shall be able to:*	*The Learners should be able to…* 1. investigate the relationship between: 1.1 volume and pressure at constant temperature of a gas; 1.2 volume and temperature at constant pressure of a gas; 1.3 explains these relationships using the kinetic molecular theory;	**S10MT-IVa-b-21**	• APEXChemistry Unit 2 Chapter 3: Gases: The Fastest-Moving Particles

K to 12 BASIC EDUCATION CURRICULUM

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCY	CODE	LEARNING MATERIALS
2. Biomolecules 2.1 Elements present in biomolecules 2.2 Carbohydrates, lipids, proteins, and nucleic acids 2.2.1 Food Labels	the structure of biomolecules, which are made up mostly of a limited number of elements, such as carbon, hydrogen, oxygen, and nitrogen		2. recognize the major categories of biomolecules such as carbohydrates, lipids, proteins, and nucleic acids;	**S10MT-IVc-d-22**	
3. Chemical reactions	the chemical reactions associated with biological and industrial processes affecting life and the environment	using any form of media, present chemical reactions involved in biological and industrial processes affecting life and the environment	3. apply the principles of conservation of mass to chemical reactions; and	**S10MT-IVe-g-23**	• APEXChemistry Unit 4 Chapter 2 Lesson 3
			4. explain how the factors affecting rates of chemical reactions are applied in food preservation and materials production, control of fire, pollution, and corrosion.	**S10MT-IVh-j-24**	• APEX Chemistry Unit 4 Chapter 2 Lesson 5

GLOSSARY	
Climate change	A significant and lasting change in the statistical distribution of weather patterns over periods ranging from decades to millions of years.
Earth	The third planet from the Sun; the densest and the fifth-largest of the eight planets in the Solar System.
Earthquake	The result of a sudden release of energy in the Earth's crust that creates seismic waves.
Ecosystem	A community of living organisms (plants, animals and microbes) in conjunction with the non-living components (air, water and mineral soil), interacting as a system.
Electricity	In physics, it is one of the basic quantitative properties describing a physical system or an object's state
Energy	The set of physical phenomena associated with the presence and flow of electric charge.
Environment	Surroundings.
Force	The exertion of physical strength.
Friction	The force which opposes the movement of one surface sliding or rolling over another with which it is in contact; the act of rubbing the surface of the body.
Gas	One of the four fundamental states of matter (the others being solid, liquid and plasma); its particles are widely separated from one another.
Gravity	A natural phenomenon by which all physical bodies attract each other.
Heat	The condition of being hot; the energy of a material body associated with the random motions of a constituent particles.
Light	An electromagnetic radiation that is visible to the human eye.
Liquid	One of the four fundamental states of matter (the others being solid, gas and plasma); the only state with definite volume but no fixed shape.
Living Things	Anything that has life; all objects that have self-sustaining processes.
Magnetism	A group of physical phenomenon associated with the interaction of a magnetic field with matter.
Matter	Anything that has space and mass.
Motion	A push or a pull; any movement or change in position.
Natural event	An event pertaining to, existing in or produced by nature.
Solar system	Comprises the Sun and its planetary system of eight planets, as well as a number of dwarf planets, satellites, and other objects that orbit the Sun.
Solid	Characterized by structural rigidity and resistance to changes of shape or volume; one of the four fundamental states of matter.

GLOSSARY	
Sound	The sensation experienced when the brain interprets vibration within the structure of the ear caused by rapid variations of air pressure.
Space	The distance between two points or objects.
Volcanic eruption	A phenomenon in which material from the depths of the earth explodes to the surface in the form of lava, or clouds of gas and ashes.
Weather	The state of the atmosphere, to the degree that it is hot or cold, wet or dry, calm or stormy, clear or cloudy.

K to 12 BASIC EDUCATION CURRICULUM
CODE BOOK LEGEND

Sample: S8ES-IId-19

LEGEND		SAMPLE	
First Entry	Learning Area and Strand/ Subject or Specialization	Science	**S8**
	Grade Level	Grade 8	
Uppercase Letter/s	Domain/Content/ Component/ Topic	Earth and Space	**ES**
			-
Roman Numeral **Zero if no specific quarter*	Quarter	Second Quarter	**II**
Lowercase Letter/s **Put a hyphen (-) in between letters to indicate more than a specific week*	Week	Week Four	**d**
			-
Arabic Number	Competency	Infer why the Philippines is prone to typhoons	**19**

DOMAIN/ COMPONENT	CODE
Living things and their Environment	LT
Force, Motion and Energy	FE
Earth and Space	ES
Matter	MT