Grade 7 FIRST QUARTER- Science of Materials		
Content	**Content Standards** *Learners learn that:*	**Learning Competency** *The learners…*
1. Use of models 2. The Particle model and changes of state 3. Planning, following, and recording scientific investigations 4. Solutions, solubility, and concentration	1. Scientists use models to explain phenomena. 2. The particle model explains the properties of solids, liquids, and gases and the processes involved in changes of state. 3. Diagrams and flowcharts are very useful in demonstrating and explaining the motion and arrangement of particles during changes of state. 4. There are specific processes for planning, conducting, and recording scientific investigations. 5. The properties of solutions such as solubility and reaction to litmus determine their use.	1. recognize that scientists use models to explain phenomena that cannot be easily seen or detected; 2. describe the Particle Model of Matter as "All matter is made up of tiny particles with each pure substance having its own kind of particles."; 3. describe that particles are constantly in motion, have spaces between them, attract each other, and move faster as the temperature increases (or with the addition of heat); 4. use diagrams and illustrations to describe the arrangement, spacing, and relative motion of the particles in each of the three states (phases) of matter; 5. explain the changes of state in terms of particle arrangement and energy changes: a. solid → liquid → vapor, and b. vapor → liquid → solid; 6. follow appropriate steps of a scientific investigation which includes: a. Aim or problem, b. Materials and equipment, c. Method or procedures, d. Results including data, and e. Conclusion. 7. make accurate measurements using standard units for physical quantities and organize the collected data when carrying out a scientific investigation; 8. identify the role of the solute and solvent in a solution; 9. express quantitatively the amount of solute present in a given volume of solvent; 10. demonstrate how different factors affect the solubility of a solute in a given solvent, such as heat; 11. identify solutions, which can be found at home and in school and that react with litmus indicator, as acids, bases, and salts; and 12. demonstrate proper use and handling of science equipment.

Performance Standard

By the end of the Quarter, learners recognize that scientists use models to describe the particle model of matter. They use diagrams and illustrations to explain the motion and arrangement of particles during changes of state. They demonstrate an understanding of the role of solute and solvent in solutions and the factors that affect solubility. They demonstrate skills to plan and conduct a scientific investigation making accurate measurements and using standard units.

Suggested Performance Task

Design and carry out an investigation to determine the amount of salt in a sample of seawater.

GRADE 7 SECOND QUARTER - Life Science		
Content	**Content Standards** *Learners learn that:*	**Learning Competency** *The learners…*
1. Science equipment: the compound microscope 2. Plant and animal cells 3. Cellular reproduction 4. Levels of biological organization 5. Trophic levels and the transfer of energy	1. Familiarity and proper use of a compound microscope are essential to observe cells. 2. The organelles of plant and animal cells can be identified using a compound microscope. 3. Cells are the basic unit of life and mitosis, and meiosis are the basic forms of cell division. 4. Fertilization occurs when a male reproductive cell fuses with a female reproductive cell.	1. identify the parts and functions, and demonstrate proper handling and storing of a compound microscope; 2. use proper techniques in observing and identifying the parts of a cell with a microscope such as the cell membrane, nucleus, cytoplasm, mitochondria, chloroplasts, and ribosomes; 3. recognize that some organisms consist of a single cell (unicellular) like in bacteria and some consist of many cells (multicellular) like in a human; 4. differentiate plant and animal cells based on their organelles; 5. recognize that cells reproduce through two types of cell division, mitosis and meiosis, and describe mitosis as cell division for growth and repair; 6. explain that genetic information is passed on to offspring from both parents by the process of meiosis and fertilization; 7. differentiate sexual from asexual reproduction in terms of: a) number of parents involved, and b) similarities of offspring to parents; 8. use a labelled diagram to describe the connections between the levels of biological organization to one another from cells to the biosphere;

	5. Sexual reproduction is the basis of heredity. 6. The level of biological organization provides a simple way of connecting the simplest part of the living world to the most complex. 7. Identifying trophic levels helps understand the transfer of energy from one organism to another as shown in a food pyramid.	9. describe the trophic levels of an organism as levels of energy in a food pyramid; and 10. use examples of food pyramids to describe the transfer of energy between organisms from one trophic level to another.

Performance Standard

By the end of the Quarter, learners demonstrate understanding of the parts and function of a compound microscope and use this to identify cell structure. They recognize that the cell is the basic unit of life and that some organisms are unicellular and some are multicellular. They explain that there are two types of cell division, and that reproduction can occur through sexual or asexual processes. They use diagrams to make connections between organisms and their environment at various levels of organization. They explain the process of energy transfer through trophic levels in food chains.

Suggested Performance Task

Create a visual representation, such as poster, model, or e-poster, explaining the trophic level in a chosen ecosystem.

GRADE 7 THIRD QUARTER - Force, Motion, and Energy		
Content	**Content Standards** *The learners learn that:*	**Learning Competencies** *The learners…*

1. Balanced and unbalanced forces 2. Motion: displacement and velocity 3. Distance-Time graphs 4. Identifying and controlling variables 5. Heat transfer	1. Scientists and engineers analyze forces to predict their effects on movement. 2. Vectors differentiate the concepts of speed and velocity. 3. Graphing motion provides more accurate predictions about speed and velocity. 4. The particle model explains natural systems and processes. 5. Scientists and engineers conduct innovative research to find solutions to the current global energy crisis by seeking renewable energy solutions.	1. identify that forces act between objects and can be measured. 2. identify and describe everyday situations that demonstrate: a. balanced forces such as a box resting on an inclined plane, a man standing still, or an object moving with constant velocity; b. unbalanced forces, such as freely falling fruit or an accelerating car; 3. draw a free-body diagram to represent the relative magnitude and direction of the forces involving balanced and unbalanced forces; 4. identify that when forces are not balanced, they can cause changes in the object's speed or direction of motion; 5. explain the difference between distance and displacement in everyday situations in relation to a reference point; 6. distinguish between speed and velocity using the concept of vectors; 7. describe uniform velocity and represent it using distance-time graphs; 8. explain the difference between heat and temperature; 9. identify advantageous and disadvantageous examples of conduction, convection, and radiation; 10. explain in terms of the particle model the processes underlying convection and conduction of heat energy; and 11. gather information from secondary sources to identify and describe examples of innovative devices that can be used to transform heat energy into electrical energy.

Performance Standard

By the end of the Quarter, learners employ scientific techniques, concepts, and models to investigate forces and motion and represent their understanding using scientific language, force diagrams, and distance-time graphs. They use their curiosity, knowledge and understanding, and skills to propose solutions to problems related to motion and energy. They explore how modern technologies might be used to overcome current global energy concerns.

Suggested Performance Task

Develop a 2-4 page brochure for parents or leaders in your community to inform them about modern technologies that can be used sustainably to transform heat into electricity in the local community.

GRADE 7 FOURTH QUARTER - Earth and Space Science		
Content	**Content Standards** *The learners learn that:*	**Learning Competencies** *The learners…*
1. System models 2. Earthquakes 3. The Sun's influence on Earth	1. Rapid movements along normal, reverse or strike-slip faults cause earthquakes. 2. The damage or effects on communities depend on the magnitude of and distance from an earthquake. 3. Sunlight is the Earth's external source of energy. 4. Solar energy influences the atmosphere and weather patterns. 5. The revolution, rotation, and the tilt of the Earth explain the patterns of day and night and the seasons.	1. classify geological faults according to the angle of the fault plane and direction of slip; 2. use models or illustrations to explain how movements along faults generate earthquakes and identify and explain which types of faults are most likely to occur in the Philippines and explain why; 3. describe how the effects of earthquakes on communities depend on their magnitude; 4. use the PHIVOLCS FaultFinder or other reliable information source to identify where the nearest fault system is located from their community and assess the risk of earthquakes to their local community; 5. make models of fault scenarios to illustrate: a. the epicenter of an earthquake from its focus, b. the intensity of an earthquake from its magnitude, and c. how underwater earthquakes may or may not generate tsunamis; 6. refer to the local disaster readiness plans to demonstrate what to do during and after an earthquake; 7. explain how earthquakes result in tsunamis that devastate shoreline communities; 8. describe procedures that the authorities have in place to alert communities of pending tsunamis and what procedures can be implemented should a tsunami impact a community; 9. explain how energy from the Sun interacts with the atmosphere; 10. make a physical model or use drawings to demonstrate how the tilt of the Earth relative to its orbit around the Sun affects the intensity of sunlight absorbed by different areas of Earth over a year; 11. explain, using models, how the tilt of the Earth affects the changes in the length of daytime at different times of the year; and

		12. explain how solar energy contributes to the occurrence of land and sea breezes, monsoons, and the Intertropical Convergence Zone (ITCZ).

Performance Standard

By the end of the Quarter, learners appreciate the value of using systems to analyze and explain natural phenomena and demonstrate their understanding in explaining the dynamics of faults and earthquakes. They are confident in identifying and assessing the earthquake risk for their local communities using authentic and reliable secondary data. They use the country's disaster awareness and risk reduction management plans to identify and explain to others what to do in the event of an earthquake. Learners explain the cause and effects of secondary impacts that some coastal communities may experience should a tsunami be produced by either local or distant earthquake activity. Learners use reliable scientific information to identify and explain how solar energy influences the atmosphere and weather systems of the Earth and use such information to appreciate and explain the dominant processes that influence the climate of the Philippines.

Suggested Performance Tasks

A. Design, test, and evaluate a model house that can withstand a model earthquake.

B. Design, test, and evaluate a model of an innovative house that can adapt to the different weather conditions in the country.

GLOSSARY

The curriculum organizers described below are used together to form the curriculum description in the Grades 3 to 10 Science Curriculum Guide. The definitions within this section are drawn from DepEd Order No. 8, s. 2015 and DepEd Order No. 21, s. 2019.

1) **Standard** – In its broadest sense, it is something against which other things can be compared to for the purpose of determining accuracy, estimating quantity or judging quality. It is a stated expectation of what one should know and be able to do.

2) **Key Stage** – This refers to stages in the K to 12 Program reflecting distinct developmental milestones. These are Key Stage 1 (Kindergarten – Grade 3), Key Stage 2 (Grades 4 – 6), Key Stage 3 (Grades 7 – 10), and Key Stage 4 (Grades 11 and 12).

3) **Key Stage Standard** – This shows the level or quality of proficiency that the learner is able to demonstrate in each key stage after learning a particular area in relation to the core learning area standard.

4) **Grade Level Standard** – This shows the level or quality of proficiency that the learner is able to demonstrate in each Grade after learning a particular area in relation to the core learning area standard.