Republic of the Philippines
Department of Education
REGION XI
SCHOOLS DIVISION OF DIGOS CITY

OFFICE OF THE SCHOOLS DIVISION SUPERINTENDENT

DIVISION MEMORANDUM
No. 417, s. 2020

September 14, 2020

MELCS FOR THE SPECIAL SCIENCE PROGRAM AND ITS SUGGESTED CURRICULUM FOR UNIFORMITY

To: Education Program Supervisors
Public Schools District Supervisors
School Principals
Digos City National High School
Digos City Central Elementary School

1. In reference to Regional Memorandum titled "MELCs for the Special Science Program and its Suggested Curriculum for Uniformity", this Office advises all SSES and STE implementing schools to use the most essential learning competencies and the suggested subject offerings with time allotment effective this SY 2020-2021. This is aimed to have uniform implementation of the Special Science Programs in the region while waiting for the issuance of the guidelines from the central office.

2. Enclosed are the lists of the SSES and STE MELCs and the suggested subject offerings per grade level.

3. For information, guidance and compliance.

CRISTY C. EPE
Schools Division Superintendent

DepEd Schools Division of Digos City
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Republic of the Philippines
Department of Education
DAVAO REGION

Office of the Regional Director

MEMORANDUM

To : Schools Division Superintendents

Subject: MELCs FOR THE SPECIAL SCIENCE PROGRAM AND ITS SUGGESTED CURRICULUM FOR UNIFORMITY

Date : September 11, 2020

Relative to the uniform implementation of the Special Science Program such as Special Science for the Elementary School (SSES) and Science, Technology and Engineering (STE) for the elementary and secondary respectively, this Office advises all SSES and STE implementing schools to use the most essential learning competencies and the suggested subject offerings with time allotment effective this SY 2020-2021 while waiting for the issuance of the guidelines from the central office.

Enclosed are the lists of the SSES and STE MELCs and the suggested subject offerings per grade level.

Immediate and wide dissemination of this Memorandum is desired.

EVELYN R. FETALVERO, CESO IV
Assistant Regional Director
Officer-In-Charge
Office of the Regional Director

Enclosed: As stated

ROC6/mlib

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Enhanced Science Curriculum

Regional Conference of Selected Science Teachers for the Most Essential Learning Competencies of Special Science Program held at Tagum City National High School, Tagum City on August 3, 2020 and Comara T. Manuel Elementary School, Lupon, Davao Oriental on August 4, 2020.

Grade Level	Suggested Curriculum of STE for Uniformity	
	Subjects	**Time allotment / Week**
Grade 7	Science	6 hours
	Mathematics	6 hours
	Research I	4 hours
	Elective Science I – Environmental Science	3 hours
	Elective Mathematics I – Introduction to Algebra	3 hours
	English	4 hours
	Filipino	4 hours
	Aral-Pan	3 hours
	Edukasyon sa Pagpapakatao	2 hours
	MAPEH	4 hours
	TOTAL HOURS	**39 hours / week**
Grade 8	Science	6 hours
	Mathematics	6 hours
	Research II	4 hours
	Elective Science II – Microbiology	3 hours
	Elective Mathematics II – Advanced Geometry	3 hours
	English	4 hours
	Filipino	4 hours
	Aral-Pan	3 hours
	Edukasyon sa Pagpapakatao	2 hours
	MAPEH	4 hours
	TOTAL HOURS	**39 hours / week**
Grade 9	Science	6 hours
	Mathematics	6 hours
	Research III	4 hours
	Elective Science III – Robotics	3 hours
	Elective Mathematics III – Advanced Trigonometry	3 hours
	English	4 hours
	Filipino	4 hours
	Aral-Pan	3 hours
	Edukasyon sa Pagpapakatao	2 hours
	MAPEH	4 hours
	TOTAL HOURS	**39 hours / week**
Grade 10	Science	6 hours
	Mathematics	6 hours
	Research IV	4 hours
	Elective Science IV – Advanced Chemistry	3 hours
	Elective Mathematics IV – Basic Calculus	3 hours
	English	4 hours
	Filipino	4 hours
	Aral-Pan	3 hours
	Edukasyon sa Pagpapakatao	2 hours
	MAPEH	4 hours
	TOTAL HOURS	**39 hours / week**

Grade Level	Suggested Curriculum of SSES for Uniformity	
	Subjects	**Time allotment / Week**
Grade 3	Science	250 minutes
	Mathematics	250 minutes
	English	250 minutes
	Aral-Pan	200 minutes
	EPP	250 minutes
	MAPEH	200 minutes
	Filipino	250 minutes
	Edukasyon sa Pagpapakatao	250 minutes
	TOTAL HOURS	**1900 minutes / week**
Grade 4	Science	250 minutes
	Mathematics	250 minutes
	English	250 minutes
	Aral-Pan	200 minutes
	EPP	250 minutes
	MAPEH	200 minutes
	Filipino	250 minutes
	Edukasyon sa Pagpapakatao	250 minutes
	TOTAL HOURS	**1900 minutes / week**
Grade 5	Science	250 minutes
	Mathematics	250 minutes
	English	250 minutes
	Aral-Pan	200 minutes
	EPP	250 minutes
	MAPEH	200 minutes
	Filipino	250 minutes
	Edukasyon sa Pagpapakatao	250 minutes
	TOTAL HOURS	**1900 minutes / week**
Grade 6	Science	250 minutes
	Mathematics	250 minutes
	English	250 minutes
	Aral-Pan	200 minutes
	EPP	250 minutes
	MAPEH	200 minutes
	Filipino	250 minutes
	Edukasyon sa Pagpapakatao	250 minutes
	TOTAL HOURS	**1900 minutes / week**

Conveners:

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Office of the Regional Director

ENHANCED SCIENCE FOR SPECIAL SCIENCE ELEMENTARY SCHOOL (SSES) PROGRAM

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GUIDELINES ON THE USE OF THE SSES ENHANCED SCIENCE CURRICULUM

I. Rationale

The current global health crisis poses a profound impact on the basic education system as approximately 87% of the world's student population, or about 1.5 billion learners, have been affected by school closures (UNESCO, 2020). While interim distance and remote learning programs are being put in place in many locations, the most marginalized, poverty-stricken, and vulnerable children are expected to be put at a disadvantage.

In the Philippines, ensuring the welfare of more than 27 million learners in basic education alone requires indomitable commitment amidst this crisis. However, as UNESCO reiterates its stand: "*Education cannot wait. If learning stops, we will lose human capital.*" Meeting the needs of the most vulnerable populations in these times is essential to achieving SDG4 (UNESCO, 2017).

The Department echoes UNESCO's belief that educational quality, access, and system strengthening cannot be compromised in times of crisis(UNESCO,2017),and that doing the opposite will negatively affect human capital. Thus, the Department of Education affirms its commitment to sustaining the delivery of quality, accessible, relevant and liberating Philippine basic education services anchored on the *Sulong EduKalidad* framework. It will continue to strive to produce holistic Filipino learners with 21st century skills. Consequently, the Bureau of Curriculum Development ensures that learning standards are relevant and flexible to address the complex, disruptive, volatile, and ambiguous impact of COVID-19 in the Philippines particularly in the basic education sector.

As a review, Section 17, Article II of the Philippine Constitution mandates the State to give priority to Education, Science and Technology to foster patriotism and nationalism, accelerate social programs and promote total human development. Section 10, Article XIV further states that Science and Technology are essential for nationalism, development, invention, innovation and their utilization. Providing opportunities for the development of scientific attitudes, technological skills and higher order thinking skills among learners of Basic Education in an environment supportive of their nurturance is the primary responsibility of the Department of Education (DepEd).

Working on the said premises, the Department of Education – Region XI, hereby releases the Most Essential Learning Competencies (MELCs) for the Special Science Elementary Schools (SSES) to be used by the field implementers in the whole Davao Region for SY 2020-2021 only. The Department emphasizes that the review of the K to 12 curriculum in the new normal remains ongoing, and the experience with MELCs for this school year will be used to inform and enrich the curriculum review.

The release of the SSES-MELCs is not just a response to addressing the challenges of the current pandemic but is alsopartoftheDepartment'slong-termresponsetothecallofSDG4todevelopresilienteducationsystems, most especially during emergencies. Thus, it can be used under certain circumstances as a mechanism to ensure education continuity through the curriculum dimension.

The SSES-MELCs will enable the Department to focus instruction to the most essential and indispensable competencies that our special science learners must acquire, as we anticipate challenges in learning delivery.

It will also lighten the burden of converting classroom-oriented learning resources into learning resources adapted to distance learning.

Releasing the SSES-MELCsdoesnotdiminishthestandardssetbythefullKto12curriculumguides.Rather,these serve as one of the guides for teachers as they address the instructional needs of learners while ensuring that curriculum standards are maintained and achieved.

Thecontentandperformancestandardsareindicatedintheattacheddocumentsforfieldimplementers,to demonstrate how the MELCs are anchored on the prescribed standards.

II. Background

The Department, through the Bureau of Curriculum Development – Curriculum Standards Development Division, in collaboration with the Assessment Curriculum and Technology Research Centre (ACTRC),started working on the identification of essential learning competencies in the middle of 2019 as part of its ongoing review of the intended curriculum. Bureau specialists, academic experts and field implementers worked to reach a consensus regarding the criteria to be used in determining these competencies. In line with this the DepEd Region Office XI initiated the enhancement of the MELCs that would meet the needs of the Special Science Curriculum.

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.

Initiated by Secretary Leonor Magtolis-Briones, the K to 12 curriculum review is not just meant to fulfill one of the provisions of Republic Act (RA) 105333 to review the curriculum, but is also part of her commitment to ensure quality, relevant and liberating education for all. After the four phases of curriculum review are completed, the Secretary will convene the Curriculum Consultative Committee to present the findings as provided for in Section 6 of the same Republic Act.

The review focuses on articulation within and across learning areas to identify gaps, issues, and concerns across learning areas and grade levels.

Specifically, the review covers the following:

- Mapping of the *essential* and *desirable Science* learning competencies within the curriculum;
- Identification of prerequisite knowledge and skills needed to prepare students for essential Science learning competencies; and
- Analysis of the interconnectedness of prerequisite knowledge and skills among the learning competencies for each subject area.

Essential learning competencies are defined as *what the students need,* considered indispensable, in the teaching-learning process to building skills to equip learners for subsequent grade levels and subsequently, forlifelonglearning.Ontheotherhand,desirablelearningcompetencieswеredefinedaswhatmayenhance education but may not be necessary in building foundational skills.

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.

A list of characteristics of essential learning competencies was provided to help reviewers decide which among the learning competencies are deemed most important.

Characteristics of an Essential Learning Competency

Learning competency is *ESSENTIAL* if ...	1. It is aligned with national and/or local standards/frameworks (eg: "scientifically literate Filipinos"). 2. It connects the content to higher concepts across content areas. 3. It is applicable to real-life situations. 4. If students leave school, it would still be important for them to have this competency above many others. 5. It would not be expected for most students to learn this in settings other than through formal education.

These characteristics are based on a US-developed competency validation rubric, which is intended to assure that learning competencies can reach the highest level of quality and comparability across schools (New HampshireDepartmentofEducation,2012),although adaptations were made for relevance in the Philippine context.

With the challenges on learning delivery posed by COVID-19, the Bureau of Curriculum Development accelerated the identification of the essential learning competencies, and streamlined these further into the **Most Essential Learning Competencies(MELCs)**.

III. Guide for Teachers in Use of SSES Enhanced Science Curriculum

The Kto12 Basic Education Curriculum is standards-based. The content standards cover a specified scope of topics which sets the essential knowledge and understanding that must be learned. The performance standards describe the abilities and skills that the learners are expected to demonstrate in relation to the content standards. These standards are further represented as learning competencies which are the knowledge, skills and attitudes that students need to demonstrate in every lesson or learning activity.

To ensure continuity of the learning progression of our learners, it is important to make sure that learning competencies needed in the understanding of succeeding concepts in the next grade level are prioritized. Overall, the resulting list still captures the objective of the science program which is the development of scientifically, technologically, and environmentally literate and productive members of society who manifest skills as critical problem solvers, responsible stewards of nature, innovative and creative citizens, informed decision makers, and effective communicators.

Below is the set of grade level standards for the K to 12 curriculum. It emphasizes how Science curriculum presented with increasing levels of complexity from grade one to another in spiral progression, thus paving the way to a deeper understanding of the concepts. It is presented as well in the enhanced curriculum the added competencies which will help in understanding the concepts clearly.

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.
Grade1	At the end of Grade1, 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).
Grade2	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.
Grade3	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.
Grade4	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.

Grade5	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.
Grade6	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.

The Science curriculum guide lists the LCs together with the code, which was set to guide the teachers the time at which a certain competency is to be delivered. However, since the learning competencies have been reduced to the most essential, the code will not be of much use. For this reason, the proposed length of time for each of the competency is also included. It should be noted that the time allocation for the competencies is not a hard and fast rule. Teachers may deviate from the time allocation as long as the LCs are delivered and developed among the learners.

The identified MELCS are broad statements and should be unpacked into learning objectives. In translating the LC into a specific learning objective, it is best to look into the content and performance standards. Below is an example of learning objectives for Matter under Grade 6 level which is taught in the first quarter.

Content Standard	Performance Standard	Learning Competency	Learning Objectives
Demonstrate understanding of different types of mixtures and their characteristics.	Learners should be able to prepare beneficial and useful mixtures such as drinks, food, and herbal medicines.	Describe the appearance and uses of homogeneous and heterogeneous mixtures.	• Identify homogeneous and heterogeneous mixtures. • Classify homogenous and heterogeneous mixtures. • Differentiate the appearance and uses between homogenous and heterogeneous mixtures.

Grade Level: Grade 1
Subject: Science

Quarter	Content Standard *The learners demonstrate understanding of...*	Performance Standard *The learners should be able to...*	Most Essential Learning Competencies	Duration
1st	Parts and functions of the human body	practice healthful habits in taking care of the different parts of the body	Describe the external parts of the body	Week 1-2
			Discuss how each body part works	Week 3-4
			Describe similarities and differences of any given 2 objects seen using the senses	Week 5-6
			Practice healthful habits to take care of the body	Week 7
2nd	parts and functions of animals	enumerate ways of grouping animals based on their characteristics	Classify animals based on their characteristics	Week 1
			Describe different movements that different animals make	Week 2
		show love and care to animals	Describe the different habitats of different animals	Week 3
			Explain how animals live	Week 4
	how plants grow and change	practice proper ways of handling plants	Group the plants based on their characteristics	Week 5
			Describe the plant in each stage in a plant's life cycle	Week 6
	basic needs and uses of plants		Identify the needs and uses of plants Perform simple experiments to find out the needs of plants to live	Week 7
3rd	ways of sorting materials and describing them as solids, liquid or gas	practice proper handling solid, liquid and gas materials found at home and in school	Sort and compare the three states of matter	Week 1
			Investigate how matter changes in state, size, color and shape	Week 2
	sources and uses of heat energy	enumerate the importance of heat energy and sound in our daily life	Identify sources and uses of heat energy	Week 3
	differentiate sounds produced by animals, vehicle cars, and musical instruments		Discover and describe how sound is produced	Week 4
	motion of objects	observe, describe, and investigate the position and movement of things around them	Explain how motion and force work	Week 5-6
			Give examples of motion in everyday life	Week 7
4th	things found in the surroundings	show care and concern for the environment	Describe the different landforms and bodies of water	Week 1
			Describe the living and nonliving things in the surroundings	Week 2
			Explain the importance of surroundings to people and other living things	Week 3

	kinds of weather	practice safety measures during certain weather conditions	Describe the different kinds of weather and what to do in different situations	Week 4
	objects in the sky		Gather data about different weather conditions	Week 5
			Identify the objects in the sky	Week 6
			Determine what particular time do objects in the sky appear	Week 7

Grade Level: Grade 2
Subject: Science

Quarter	Content Standard *The learners demonstrate understandingof...*	Performance Standard *The learners should be able to...*	Most Essential Learning Competencies	Duration
1st	Parts and functions of the sense organs of the human body	practice healthful habits in taking care of the sense organs	Describe the functions of different senses	Week 1
			Tell short stories about what they do, what they see, or what they feel	Week 2
			Enumerate healthy habits to protect the sense organs	Week 3
	how people grow and change		Compare how humans are alike and different at different stages of life	Week 4
	basic food groups and healthy food habits	practice good eating habits	Classify and describe basic food groups	Week 5
			Enumerate good eating habits	Week 6
			Explain the importance of practicing good eating habits	Week 7
2nd	parts and functions of animals	enumerate ways of grouping animals based on their structure and importance	Classify animals according to body parts and use, and the food they eat	Week 1
			Explain ways of proper handling of animals	Week 2
	external parts of plants and their functions and importance to humans	practice proper ways of handling plants	Compare two or more kinds of plants	Week 3
			Explain the importance of plants to humans	Week 4
	how plants grow and change		Explain the life cycle of a plant	Week 5
	basic needs of plants, animals, and humans to survive	practice ways to protect and conserve the environment	Explain how living things depend on the environment to meet their basic needs	Week 6
			Enumerate ways to protect and conserve the environment	Week 7
3rd	ways of sorting materials and describing them as	practice proper handling solid, liquid and gas materials found	Classify objects and materials as solid, liquid or gas based on some observable characteristics	Week 1

	solids, liquid or gas based on observable properties	at home and in school	Describe ways on the proper use and handling solid, liquid and gas materials found at home and in school	Week 2
	effects of temperature on materials		Investigate and describe the different changes in materials as affected by temperature	
	light and heat energy come from the sun	enumerate the importance of light and heat energy in our daily life	Distinguish luminous and non-luminous objects	Week 3
			Explain the importance of light and heat energy in our daily life	
	how shadows are formed		Explain how one's shadow looks like in different times of the day	Week 4
	sound is produced by vibrations		Enumerate sources and uses of sounds	Week 5
	motion of objects	observe, describe, and investigate the position and movement of things around them	Describe and investigate the position and movement of things around them	Week 6
			Explain how forces make objects move such as people, wind, water, magnets, gravity, electricity and machines	Week 7
4th	things found in different surroundings	show care and concern for the environment	Describe the things found in different surroundings	Week 1
			Distinguish renewable and non-renewable resources	Week 2
			Explain the importance of preserving the resources of the Earth	Week 3
			Enumerate ways on electricity, water, and paper conservation,	Week 4
	kinds of weather	practice precautionary measures in dealing with different types of weather	Describe the changes in the weather over a period of time	Week 5
			Communicate how different types of weather affect activities in the community	Week 6
			Enumerate safety precautionary measures in dealing with different types of weather	Week 7

Grade Level: Grade 3
Subject: Science

Quarter	Content Standard *The learners demonstrate understanding of...*	Performance Standard *The learners should be able to...*	Most Essential Learning Competencies	Duration	K to 12 CG Code
1st	ways of sorting materials and describing them as solid, liquid or gas based on observable properties	group common objects found at home and in school according to solids, liquids and gas	Describe different objects based on their characteristics (i.e. shape, weight, volume, ease of flow, texture, ability to float or sink);	Week 1-3	
			Describe changes in materials based on the effect of temperature: 1 solid to liquid 2 liquid to solid 3 liquid to gas 4 solid to gas	Week 4-7	**S3MT-Ih-j-4**
2nd	parts, and functions of the sense organs of the human body;	practice healthful habits in taking care of the sense organs;	Describe the parts and functions of the sense organs of the human body	Week 1	**S3LT-IIa-b-1**
	parts and functions of animals and importance to humans	enumerate ways of grouping animals based on their structure and importance	Describe animals in their immediate surroundings	Week 2	**S3LT-IIc-d-3**
			Identify the external parts and functions of animals	Week 2	**S3LT-IIc-d-4**
			Classify animals according to body parts and use	Week 3	**S3LT-IIc-d-5**
			State the importance of animals to Humans	Week 3	**S3LT-IIc-d-6**
	external parts of plants and their functions, and importance to humans	demonstrate the proper ways of handling plants	Describe the parts of different kinds of plants	Week 4	**S3LT-IIe-f-8**
			State the importance of plants to humans	Week 4	**S3LT-IIe-f-9**
	characteristics of living and nonliving things	illustrates the difference between living and non-living things	Compare living with nonliving things	Week 5	**S3LT-IIe-f-11**
			Identify observable characteristics that are passed on from parents to offspring (e.g., humans, animals, plants)	Week 5	**S3LT-IIg-h13**
	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	Explain how living things depend on the environment to meet their basic needs	Week 6	**S3LT-IIi-j-15**
			Recognize that there is a need to protect and conserve the environment	Week 7	**S3LT-IIi-j-16**

3rd	motion of objects	observe, describe, and investigate the position and movement of things around them	Describe the position of a person or an object in relation to a reference point such as chair, door, another person	Week 1-3	**S3FE-IIIa-b-1**
	sources and uses of light, sound, heat and electricity	apply the knowledge of the sources and uses of light, sound, heat, and electricity	Identify and describe sources of light, sound, thermal energy, and electrical energy;	Week 4- 7	
4th	people, animals, plants, lakes, rivers, streams, hills, mountains, and other landforms, and their importance	express their concerns about their surroundings through teacher-guided and self – directed activities	Relate the importance of surroundings to people and other living things	Week 1-2	**S3ES-IVc-d-2**
	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	Analyze how the different elements can affect the weather condition	Week 3-4	
			Enumerate and practice safety and precautionary measures in dealing with different types of weather	Week 5-6	**S3ES-IVg-h-5**
	natural objects in the sky affect one's daily activities	list down activities which affect their daily activities	Describe the natural objects that are found in the sky during daytime and nighttime	Week 7	**S3ES-IVg-h-6**

Grade Level: Grade 4
Subject: Science

Quarter	Content Standard *The learners demonstrate understanding of...*	Performance Standard *The learners should be able to...*	Most Essential Learning Competencies	Duration	K to 12 CG Code
1st	grouping different materials based on their properties	Recognize and practice proper handling of products	Classify materials based on the ability to absorb or repel and its tendency to undergo decay and biodegradability	Week 1	**SSP_S4MT-Ia-1**
			Demonstrate proper waste disposal according to the properties of materials	Week 2	**SSP_S4MT-Ic-d-3**

	changes that materials undergo when exposed to certain conditions.	evaluate whether changes in materials are useful or harmful to	Describe changes in solid materials when they are bent, pressed, hammered, or cut	Week 3-4	**S4MT-Ie-f-5**
			Describe changes in properties of materials when exposed to certain conditions such as temperature or when mixed with other materials	Week 5-6	**S4MT-Ig-h-6**
			Identify changes in materials whether useful or harmful to one's environment.	Week 7	**S4MT-Ii-j-7**
2nd	how the major internal organs such as the brain, heart, lungs, liver, stomach, intestines, kidneys, bones, and muscles keep the body healthy	construct a model of a major organ of the human body to show how it works	Describe the main function of the major organs	Week 1	**S4LT-IIa-b-1**
			Communicate by using a model that the major organs work together to make the body function properly	Week 1	**S4LT-IIa-b-2**
			Infer that body structures help animals adapt and survive in their particular habitat	Week 2	**S4LT-IIa-b-4**
	animals have body parts that make them adapt to land or		Compare body movements of animals in their habitat;	Week 2	**SSP_S4LT-IIc-d-6**
	plants have body parts that make them adapt to land or water		Identify the specialized structures of terrestrial and aquatic plants	Week 3	**S4LT-IIe-f-9**
			Conduct investigation on the growth and development of plants with specialized structures given different environmental conditions (light, water, temp. soil)		**SSP_S4LT-IIe-f-10**
	different organisms go through life cycle which can be affected by their environment		Compare the stages in the life cycle of organisms	Week 4	**S4LT-IIg-h-13**
	beneficial and harmful interactions occur among living things and their environment as they obtain basic needs		Describe the effect of the environment on the life cycle of organisms	Week 5	**S4LT-IIg-h-14**
			Describe some types of beneficial and harmful interactions among living things	Week 6	
			Describe the effects of interactions among organism in their environment	Week 7	**S4LT-IIi-j-18**
3rd	force that can change the		Differentiate contact and non-contact forces	Week 1	**SSP_S4FE-IIIa-**

	shape, size or movement of objects.				12
			Explain the effects of force when applied to an object	Week 2	**S4FE-IIIa-1**
			Investigate the forces exerted by magnets	Week 3	**SSP_S4FE-IIIe**
	how light, heat and sound travel using various objects	demonstrate conceptual understanding of properties/characteristics of light, heat and sound	Investigate how light interacts with objects and determine whether an object is opaque, translucent and transparent; Investigate how sound travels through different media;	Week 4 Week 5	**SSP_S4FE-IIIe-f** **SSP_S4FE-IIIf-g-**
			Investigate how thermal energy travels through different materials	Week 6	**SSP_S4FE-IIIg-h**
			Describe properties and characteristics of heat, light and sound energy.	Week 7	**S4FE-IIIh-5**
4th	the different types of soil		Compare and contrast the characteristics of different types of soil	Week 1	**S4ES-IVa-1**
	the different sources of water suitable for human consumption		Investigate the different uses of water from various sources in the context of daily activities	Week 2	**S4ES-IVb-2**
			Illustrate and describe the importance of the water cycle	Week 3	
	components of weather using simple instruments	practice precautionary measures in planning activities	Use weather instruments to measure the different weather components.	Week 4	
			Make simple interpretations about the weather as recorded in a weather chart Identify safety precautions during different weather conditions	Week 5	**SSP_S4ES-IVf** **S4ES-IVg-8**
	the Sun as the main source of heat and light on Earth		Describe the changes in the position and length of shadows in the surroundings as the position of the Sun change	Week 6	**S4ES-IVh-9**
			Describe the effects of the Sun to human activities	Week 7	

Grade Level: Grade 5
Subject: Science

Quarter	Content Standard *The learners demonstrate understanding of...*	Performance Standard *The learners should be able to...*	Most Essential Learning Competencies	Duration	K to 12 CG Code
1st	properties of materials to determine whether they are useful or harmful	uses local, recyclable solid and/or liquid materials in making useful products	Evaluate the condition of materials whether they are useful or potentially harmful	Week 1-2	
	materials undergo changes due to oxygen and heat		Investigate changes that happen in materials under the following conditions: 1 presence or lack of oxygen 2 application of heat	Week 3-5	**S5MT-Ic-d-2**
			Design a product out of local, recyclable solid and/ or liquid materials in making useful products.	Week 6-7	**S5MT-Ih-i-4**
2nd	how the parts of the human reproductive system work	Practice proper hygiene to care of the reproductive organs	Describe the parts of the reproductive system and their functions	Week 1	**S5LT-IIa-1**
			Explain the menstrual cycle	Week 2	**S5LT-IIc-3**
	how animals reproduce	create a hypothetical community to show how organisms interact and reproduce to survive	Describe the different modes of reproduction in animals such as butterflies, mosquitoes, frogs, cats and dogs	Week 3	**S5LT-IIe-5**
	how plants reproduce		Describe the reproductive parts in plants and their functions	Week 4	**S5LT-IIf-6**
			Describe the different modes of reproduction in flowering and non-flowering plants such as moss, fern, mongo and others	Week 5	**S5LT-IIg-7**
	the interactions for survival among living and non-living things that take place in estuaries and intertidal zones		Discuss the interactions among living things and non-living things in estuaries and intertidal zones	Week 6	**S5LT-IIh-8**
			Explain the need to protect and conserve estuaries and intertidal zones	Week 7	**S5LT-Ii-j-10**
3rd	motion in terms of distance and time		Measure distance and time using appropriate tools and standard units Construct and interpret a distance and time graph	Week 1 Week 2	

	how different objects interact with light and sound, heat ; the effects of heat and electricity, light and sound on people and objects		Explain how different types of materials interact with light, heat and electricity	Week 3	
			Investigate how colors affect the ability of the object to absorb heat.	Week 4	**S5FE-IIIe-5**
	a simple DC circuit and the relationship between electricity and magnetism in electromagnets	propose device using electromagnet that is useful for home school or community	Infer the conditions necessary to make a bulb light up	Week 5	**S5FE-IIIf-6**
			Determine the effects of changing the number or type of components in a circuit	Week 6	**S5FE-IIIg-7**
			Investigate the relationship between electricity and magnetism in electromagnets	Week 7	
4th	weathering and soil erosion shape the Earth's surface and affect living things and the environment	participate in projects that reduce soil erosion in the community	Describe how rocks turn into soil	Week 1	**S5FE-IVa-1**
			Investigate extent of soil erosion in the community and its effects on living things and the environment	Week 2	**S5FE-IVb-2**
	weather disturbances and their effects on the environment.	prepares individual emergency kit.	Characterize weather disturbances in the Philippines and describe their effects to daily life	Week 3-4	
	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	Infer the pattern in the changes in the appearance of the Moon	Week 5	**S5FE-IVg-h-7**
	constellations and the information derived from their location in the sky.		Identify star patterns that can be seen at particular times of the year	Week 6-7	**S5FE-IVi-j-9**

Grade Level: Grade 6
Subject: Science

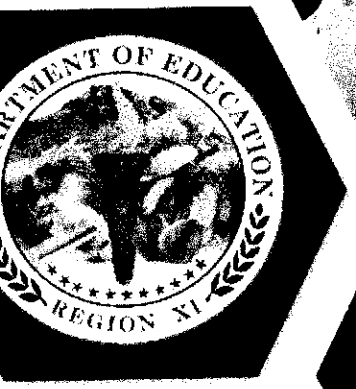
Quarter	Content Standard *The learners demonstrate understanding of...*	Performance Standard *The learners should be able to...*	Most Essential Learning Competencies	Duration	K to 12 CG Code
1st	different types of mixtures and their characteristics	prepare beneficial and useful mixtures such as drinks, food, and herbal medicines.	Describe the appearance and usesof homogeneous and heterogeneous mixtures	Week 1-3	
	different techniques to separate mixtures	separate desired materials from common and local products.	Describe techniques in separating mixtures such as decantation, evaporation, filtering, sieving and using magnet	Week 4-7	
2nd	how the major organs of the human body work together to form organ system	make a chart showing healthful habits that promote proper functioning of the musculo-skeletal, integumentary, digestive, circulatory, excretory, respiratory, and nervous systems	Explain how the organs of each organ system work together	Week 1-2	**S6LT-IIa-b-1**
			Explain how the different organ systems work together	Week 3	
	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	Determine the distinguishing characteristics of vertebrates and invertebrates	Week 4-5	**S6MT-IIe-f-3**
	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	Discuss the interactions among living things and non-living things in tropical rainforests, coral reefs and mangrove swamps	Week 6	**S6MT-IIi-j-5**
			Explain the need to protect and conserve tropical rainforests, coral reefs and mangrove swamps	Week 7	**S6MT-IIi-j-6**

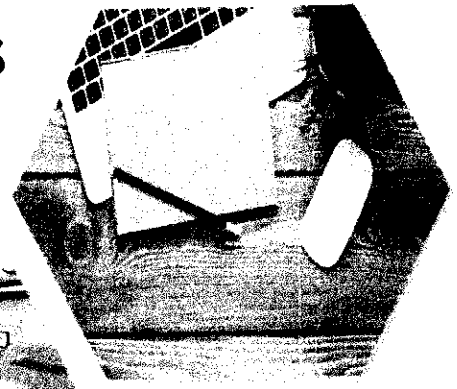
3rd	gravity and friction affect movement of objects	produce an advertisement demonstrates road safety	Explainhow friction and gravity affect movements of different objects	Week 1-2	
			Investigate different ways to reduce or increase friction on various types of surfaces	Week 3-4	
	how energy is transformed in simple machines	create a marketing strategy for a new product on electrical or light efficiency	Explain how potential energy and kinetic energy are transformed in simple machines	Week 5-7	
4th	the effects of earthquakes and volcanic eruptions	design an emergency and preparedness plan and kit	Describe the changes on the Earth's surface as a result of earthquakes and volcanic eruptions	Week 1	**S6ES-IVa-1**
			Enumerate what to do before, during and after earthquake and volcanic eruptions	Week 2	**S6ES-IVb-2**
	weather patterns and seasons in the Philippines:		Describe the different seasons in the Philippines	Week 3	**S6ES-IVc-3**
	the earth's rotation and revolution		Differentiate between rotation and revolution and describe the effects of the Earth's motions	Week 4	
			Compare the planets in the solar system	Week 5-6	**S6ES-IVg-h-6**
			Construct a model of the solar system showing the relative sizes of the planets and their relative distances from the Sun	Week 7	**S6ES-IVi-j-7**

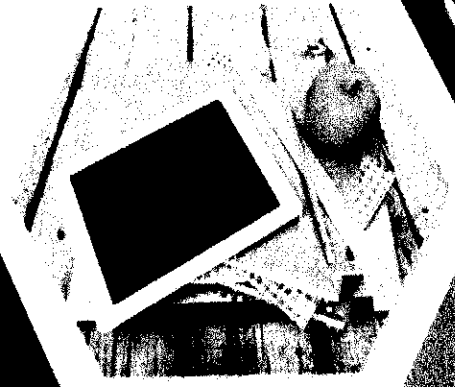
Source:

K to 12 Science Curriculum Guide, 2016
MELCs Guidelines, 2020
SSES Science Curriculum Guide, 2017

K to 12
Most Essential Learning Competencies
With Corresponding CG Codes







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KAGAWARAN NG EDUKASYON

Department of Education
Curriculum and Instruction Strand

CONTENT

GUIDELINES ON THE USE OF THE MOST ESSENTIAL LEARNING COMPETENCIES (MELCs) FOR SCIENCE, TECHNOLOGY, AND ENGINEERING PROGRAM

I. Rationale

As the COVID19 pandemic continues to impact various governments and economies around the world, even schools are not spared from its crippling effects. The current global health crisis poses a profound impact on the basic education system as approximately 87% of the world's student population, that is 1.5 billion learners, have been affected by school closures (UNESCO, 2020). While interim distance and remote learning programs are being put in place in many locations, the most marginalized, poverty-stricken, and vulnerable children are also the most disadvantaged.

As for the Philippines, ensuring the welfare of more than 27 million learners in the basic education alone requires indomitable commitment especially amidst this crisis. However, as UNESCO reiterates its stand in spite of the circumstances, 'Education cannot wait. If learning stops, we will lose human capital.' Thus, meeting the needs of the most vulnerable populations in these times is essential in achieving SDG4 (UNESCO, 2017).

It is the mandate of the Philippine Constitution that the state shall protect and promote the right of all Filipinos to quality education at all levels, and shall take appropriate steps to make such education accessible to all. Whereas, the COVID-19 pandemic posed challenges to various sectors, especially in responding to basic rights. The education sector is among the heavily affected sectors as schools and community learning centers have ceased operations for the conduct of physical classes. As a response to the mandate of the constitution and in consideration to the present health crisis, the Department of Education developed the basic learning continuity plan to mobilize all stakeholders in engaging on strategic actions to address the issues and challenges in the education sector. DepEd stands with its basic principles that education must continue despite the pandemic. Thus, DepEd affirms its commitment to sustaining the delivery of quality, accessible, relevant, and liberating Philippine basic education services anchored on the *Sulong Edukalidad* framework. Along with its continued efforts to produce holistic Filipino learners equipped with 21st century skills, the Bureau of Curriculum Development released the Most Essential Learning Competencies (MELCs) to implement throughout the country for the School Year 2020-2021. The release of MELCs is not just a response to the present pandemic but also a part of the long-term response to develop resilient educational systems most especially during emergencies.

Working on the said premise, the Department hereby releases the Most Essential Learning Competencies (MELCs) to be used nationwide by STE implementing schools for SY 2020-2021 only. The release of the MELCs is not just a response to addressing the challenges of the current pandemic but is also part of the Department's long-term response to the call of SDG 4 to develop resilient education systems, most especially during emergencies. Thus, it can be used under certain circumstances as a mechanism to ensure education continuity (curriculum dimension). However, releasing the MELCs does not downplay the standards set by the K to 12 curriculum guides. Rather, these serve as guide to teachers as they address the instructional needs of learners while ensuring that curriculum standards are maintained and achieved. The content and performance standards are indicated in the attached documents for field implementers to recognize that the MELCs are anchored on the prescribed standards.

Furthermore, the MELCS intend to assist the schools in navigating the limited number of school days as they employ multiple delivery schemes by providing them ample instructional space. It also enables DepEd to focus instruction to the most essential and indispensable competencies that the learners must acquire and will lighten the burden of converting classroom-oriented learning resources adapted to distance learning. Moreover, the MELCs do not diminish the standards set by the full K to 12 curriculum guides. Rather, they serve as guides for teachers as they address the instructional needs of learners while keeping and achieving the curriculum standards.

II. Background on the Identification of the Most Essential Learning Competencies

On the part of Science, Technology, and Engineering Program, these basic and most essential learning competencies were enhanced to address the needs of high aptitude learners in science and mathematics and the alignment of elementary, high school, and senior high school subjects (SSES, STE, and STEM). In this way, learners will develop the most essential competencies and skills fit to their chosen career paths in science, technology, engineering, and mathematics.

The Department, through the Bureau of Curriculum Development – Curriculum Standards Development Division in collaboration with the Assessment Curriculum and Technology Research Centre (ACTRC), started working on the identification of essential learning competencies in the middle of 2019 as part of its initiative in reviewing the intended curriculum. Bureau specialists, academic experts and field implementers worked to reach a consensus regarding the criteria to be used and mechanism to adopt in determining these competencies. Initiated by Secretary Leonor Magtolis-Briones, the K to 12 curriculum review is not just meant to fulfill one of the provisions of Republic Act (RA) 105333 to review the curriculum but is her continuing commitment to ensure quality, relevant and liberating education. After the four phases of curriculum review are completed, the Secretary will convene the Curriculum Consultative Committee to present the findings as provided for in Section 6 of the same Republic Act.

The review focused on articulation within and across learning areas which led to the identification of gaps, issues, and concerns across learning areas and grade levels. Moreover, areas for improvement that would enhance the learning engagement, experience and outcomes were recommended.

Results of the review from the workshop series provided an overview of the articulation of learning competencies in each learning area. Specifically, the review covered the following:

- mapping of the *essential* and *desirable* learning competencies within the curriculum;
- identification of prerequisite knowledge and skills needed to prepare students for essential learning competencies; and
- analysis of the interconnectedness of prerequisite knowledge and skills among the learning competencies for each subject area.

Essential learning competencies *were defined as what the students need,* considered indispensable, in the teaching-learning process to building skills to equip learners for subsequent grade levels and consequently, for lifelong learning. On the other hand, desirable learning competencies were defined as what may enhance education but may not be necessary in building foundational skills.

A list of characteristics of essential learning competencies was provided to help participants decide which among the learning competencies are deemed most important.

Characteristics of an Essential Learning Competency

Learning competency is ESSENTIAL if.....	1. it is aligned with national, state, and/or local standards/ frameworks (eg: 'scientifically literate Filipinos'). 2. it connects the content to higher concepts across content areas. 3. it is applicable to real-life situations. 4. If students left school after this grade, it would be important for them to have this competence above many others.

These characteristics are based on a US-developed competency validation rubric, which is intended to assure that learning competencies can reach the highest level of quality and comparability across schools (New Hampshire Department of Education, 2012); adaptations were made for relevance in the Philippine context. As the Department anticipates the challenges in employing various schemes in the delivery of the learning standards due to COVID19, the number of the identified essential learning competencies per quarter were further reduced, thus, the term **most essential learning competencies (MELCs)**.

In determining the criteria for the selection of the most essential learning competencies, the Department in consultation with stakeholders, during which the descriptor – ENDURANCE – was considered the primary determining factor. A learning competency is considered enduring if it remains with learners long after a test or unit of study is completed or if it is useful beyond a single test or unit of study. Examples of such learning competencies include research skills, reading comprehension, writing, map reading, and hypothesis testing, which are essential in many professions and in everyday life (Reeves, 2002; Many & Horrell, 2014). The Department then identified the MELCs through the application of these understandings.

Necessary in the above process is the decision whether a learning competency is to be retained, merged, dropped, or rephrased. As a general rule, a learning competency is *retained* if it satisfies the endurance criterion which greatly contributes to life-long learning and is a pre-requisite skill to the next grade level. On the other hand, two or more learning competencies are *merged or clustered* if they have the same objective or learning intention; and thus, can be combined into one comprehensive learning competency. In addition, a significant number of learning competencies is *removed/dropped* due to the following reasons:

- they are too specific (and the articulation is similar to that of a learning objective)
- they are deemed appropriate to be introduced in an earlier quarter or grade level or moved to a later quarter or grade level
- they are recurring
- they are subsumed in another learning competency.

Finally, a learning competency is rephrased to be more concise.

The Department of Education, Regional Office XI through the Curriculum and Learning Management Division developed the Enhanced MELCs for the STE Implementing Schools in Region XI as a response to the status quo of the STE Curriculum. This will ensure that all STE implementing schools in the region are following the same MELCs. The content and performance standards as well as enhanced competencies are directly lifted from the 2014 enhanced curriculum guide and 2016 Training for STE in Cebu City. Its inclusion is to emphasize that the identification of MELCs is anchored on the prescribed standards and not a departure from the standards-based basic education curriculum. Thus, teachers are encouraged to refer to the 2016 Curriculum Guides in unpacking the MELCs.

All learning areas will still be taken up by the learners in all grade levels, albeit with streamlined competencies. This is to ensure that the learning outcomes are still achieved even in this pandemic. It is noted that, by principle, the time allocated per subject on a daily basis did not change. This means that schools need to consider this aspect in employing various delivery schemes. STE implementing schools in Region XI are encouraged to contextualize the most essential learning competencies in order to accommodate the varying contexts of learners, teachers, learning environment and support structures considering both the content and performance standards. It is advantageous for students to learn the concepts and skills in the MELCs through meaningful activities and scenarios relatable to them and within the context of the students' own environment. The MELCs are implementable as long as the designed activities also teach the procedures and processes on how and when to apply those knowledge and skills in a given context. With these, Filipino learners are guaranteed relevant and quality basic education despite the current health crisis.

The Department of Education, through the Office of the Undersecretary for Curriculum and Instruction, shall gather relevant feedback on a regular basis from all concerned internal and external partners and stakeholders in the implementation of these guidelines in order to further enhance its provisions and findings which will serve as inputs to the ongoing review of the K to 12 curriculum.

III. Guide in Using the Enhanced MELC for Science, Technology, and Engineering (STE) Program

The enhanced most essential learning competencies (eMELCs) for the STE program is primarily anchored on the MELCs of the basic science education but were purposefully enhanced to meet the standards of the STE program. In using the eMELCs, teachers are enjoined to observe the following guidelines:

1. The eMELCs are the same MELCs in the basic science education, however, with additional learning competencies. These additional learning competencies are aligned on the content-standards and performance standards of the K to 12 basic science education curricula in consonance with the minimum MELCs.
2. The eMELCs are broad statements that need to be unpacked by teachers. However, in some instances, the eMELCs may be used as standalone learning objectives whenever applicable.
3. In delivering instruction, the time frame allotted to teach an eMELC is flexible in consideration to the learning difficulties that learners may experience in the new normal.

Subject: Science

Quarter	Content Standard	Performance Standard	Most Essential Learning Competencies	DURATION	K to 12 CG Code
1st	scientific knowledge		Describe the components of a scientific investigation	Week 1	S7MT-Ia-1
			Describe how to manipulate common laboratory apparatus (balance, beaker, graduated cylinder, meter stick, thermometer)	Week 1	
	classifying or compou		Recognize that substances are classified into elements and compounds	k 2-3	S7MT-Ig-h-5
			Recognize uses of elements and compounds	2-3	
			Recognize u		
	the properti distinguish them from mixtures.	ies of mixtures of varying concentrations using available materials in the community for specific purposes.	Distinguish set of proper		S7MT-Ie-f-4
			Determine natural indi		
			Manipulate (balance, beaker, graduated cylinder, meter stick, thermometer).		
	some important properties of solutions.	Prepare different concentrations of mixtures according to uses and availability of materials.	Investigate properties of unsaturated or saturated solutions.	Week 6	S7MT-Ie-2
			Express concentrations of solutions quantitatively by preparing different concentrations of mixtures according to uses and availability of materials	Week 7	S7MT-Id-3

This is the K to 12 minimum learning competency (LC).

This is the additional LC in the enhanced science curriculum.

This is the suggested time frame to teach the additional LC.

Grade level: 8
Subject: Science

Quarter	Content Standard *The learners demonstrate understanding of…*	Performance Standar *The learners should…*		DURATION	K to 12 CG Code
1st	Newton's three laws of motion.	develop a written implement a "Newton		Week 1	S8FE-Ia-15
			an equal amount of force is ex	Week 2	S8FE-Ia-16
			Solve problems involving force, d linear acceleration.	Week 2	
			Relate Newton's laws of motion to bodies in uniform circular motion.		
	work using constant force, power, gravitational potential energy, kinetic energy, and elastic potential energy.		Identify and explain the factors that affect potential and kinetic energy.	Week 2-3	
			Describe how work is related to power and energy conceptually and mathematically.	Week 2-3	
	the propagation of sound through solid, liquid, and gas.		**Calculate the speed of sound in reference to temperature.**	Week 4	

However, in some instances where the time frame for the additional LC is missing, it is assumed to be delivered within the same time frame as the previous LC.

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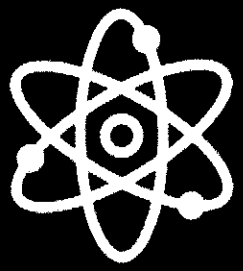

SCIENCE

Quarter	Content Standard *The learners demonstrate understanding of...*	Performance Standard *The learners should be able to...*	Most Essential Learning Competencies	DURATION	Kto12 CG Code
1st	scientific ways of acquiring knowledge and solving problems.	perform in groups in guided investigations involving community-based problems using locally available materials.	Describe the components of a scientific investigation	Week 1	S7MT-Ia-1
			Describe how to manipulate common laboratory apparatus (balance, beaker, graduated cylinder, meter stick, thermometer).	Week 1	
	classifying substances as elements or compounds.	make a chart, poster, or multimedia presentation of common elements showing their names, symbols, and uses.	Recognize that substances are classified into elements and compounds	Week 2-3	S7MT-Ig-h-5
			Recognize uses of elements and compounds.	Week 2-3	
			Recognize uses of metals and non-metals.	Week 2-3	
	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.	Distinguish mixtures from substances based on a set of properties	Week 4-5	S7MT-Ie-f-4
			Determine basic and acidic mixtures using natural indicators.	Week 4-5	
			Manipulate common laboratory apparatus (balance, beaker, graduated cylinder, meter stick, thermometer).	Week 4-5	
	some important properties of solutions.	Prepare different concentrations of mixtures according to uses and availability of materials.	Investigate properties of unsaturated or saturated solutions.	Week 6	S7MT-Ic-2
			Express concentrations of solutions quantitatively by preparing different concentrations of mixtures according to uses and availability of materials.	Week 7	S7MT-Id-3
2nd	the parts and functions of the compound microscope.	employ appropriate techniques using the compound microscope to gather data about very small objects.	Identify parts of the microscope and their functions.	Week 1	S7LT-IIa-1
			Focus specimens using the compound microscope.	Week 2	S7LT-IIb-2
	the different levels of biological organization.		Describe the different levels of biological organization from cell to biosphere.	Week 3	S7LT-IIc-3
	the difference between animal and plant cells.		Differentiate plant and animal cells according to presence or absence of certain organelles.	Week 4	S7LT-IId-4
			Explain why the cell is considered the basic structural and functional unit of all organisms.	Week 4	S7LT-IIe-5

	reproduction being both asexual or sexual.		Differentiate asexual from sexual reproduction in terms of: 1. Number of individuals involved; 2. Similarities of offspring to parents.	Week 5	S7LT-IIg-7
	organisms interacting with each other and with their environment to survive.		Differentiate biotic from abiotic components of an ecosystem.	Week 6	S7LT-IIh-9
			Describe the different ecological relationships found in an ecosystem.	Week 6	S7LT-IIh-10
			Predict the effect of changes in abiotic factors on the ecosystem.	Week 7	S7LT-IIj-12
3rd	conduct a forum on mitigation and disaster risk reduction.	conduct a forum on mitigation and disaster risk reduction.	**Calculate speed, velocity and acceleration.**	Week 1-2	S7FE-IIIa-1
			Determine the resultant vector using graphical method.	Week 1-2	
			Create and interpret visual representation of the motion of objects such as tape charts and motion graphs.	Week 3	S7FE-IIIb-3
	waves as carriers of energy.		Infer that waves carry energy.	Week 4	S7LT-III-c-4
			Describe the characteristics of sound using the concepts of wavelength, velocity, and amplitude.	Week 4	S7LT-III-d-7
	the characteristics of light.	suggest proper lighting in various activities.	Explain color and intensity of light in terms of its wave characteristics.	Week 5	
	how heat is transferred.		Infer the conditions necessary for heat transfer to occur.	Week 6	S7LT-IIIh-i-12
	charges and the different charging processes.		Describe the different types of charging processes.	Week 7	S7LT-III-j-13
4th	the relation of geographical location of the Philippines to its environment.	analyze the advantage of the location of the Philippines in relation to the climate, weather, and seasons.	Demonstrate how places on Earth may be located using a coordinate system.	Week 1	S7ES-IVa-1
			Cite and explain ways of using Earth's resources sustainably.	Week 2	
	the different phenomena that occur in the atmosphere.		Discuss how energy from the Sun interacts with the layers of the atmosphere	Week 3	S7ES-IVd-5
			Account for the occurrence of land and sea breezes, monsoons, and intertropical convergence zone (ITCZ).	Week 3	S7ES-IVf-7
			Using models, relate: 1 the tilt of the Earth to the length of daytime 2 the length of daytime to the amount of energy received	Week 4-5	S7ES-IVh-9

			3 the position of the Earth in its orbit to the height of the Sun in the sky 4 the height of the Sun in the sky to the amount of energy received 5 the latitude of an area to the amount of energy the area receives 6 tilt of the Earth and the seasons.		
			Analyze and interpret patterns of tides and relate them to the position of the moon and the Sun with respect to the Earth.	Week 4-5	
	the occurrence of eclipses.		Explain how solar and lunar eclipses occur using models.	Week 6	
			Describe the location of the Philippines with respect to the continents and oceans of the world.	Week 7	S7ES-IVa-2
			Recognize that soil, water, rocks, coal, and other fossil fuels are Earth materials that people use as resources.	Week 7	S7ES-IVb-3

Grade level: 8
Subject: Science

Quarter	Content Standard *The learners demonstrate understanding of...*	Performance Standard *The learners should be able to...*	Most Essential Learning Competencies	DURATION	Kto12 CG Code
1st	Newton's three laws of motion.	develop a written plan and implement a "Newton's Olympics".	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	Week 1	S8FE-Ia-15
			Infer that when a body exerts a force on another, an equal amount of force is exerted back on it	Week 2	S8FE-Ia-16
			Solve problems involving force, mass and linear acceleration.	Week 2	
			Relate Newton's laws of motion to bodies in uniform circular motion.		
	work using constant force, power, gravitational potential energy, kinetic energy, and elastic potential energy.		Identify and explain the factors that affect potential and kinetic energy	Week 2-3	
			Describe how work is related to power and energy conceptually and mathematically.	Week 2-3	
	the propagation of sound through solid, liquid, and gas.		**Calculate the speed of sound in reference to temperature.**	Week 4	
	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.	Explain the hierarchy of colors in relation to the energy of visible light	Week 4	S8FE-If-27
	heat and temperature, and the effects of heat on the body.		Differentiate between heat and temperature at the molecular level	Week 4	S8FE-Ig-29
	current- voltage-resistance relationship, electric power, electric energy, and home circuitry.		Infer the relationship between current and voltage	Week 5-6	
			Explain the advantages and disadvantages of series and parallel connections in homes	Week 7	S8FE-Ii-31
			Explain the functions of circuit breakers, fuses, earthing, double insulation, and other safety devices in the home	Week 7	S8FE-Ii-33
2nd	the relationship between faults and earthquakes.	1. participate in decision making on where to build structures based on knowledge of the location of active faults in the community.	Using models or illustrations, explain how movements along faults generate earthquakes	Week 1	S8ES-IIa-14
			Differentiate the epicenter of an earthquake from its focus.	Week 1-2	S8ES-IIa-15

		2. make an emergency plan and prepare an emergency kit for use at home and in school.	Explain how earthquake waves provide information about the interior of the earth.	Week 3	S8ES-IIc-17
			Explain how landmasses, bodies of water, sea surface temperature, wind shear and Coriolis effect affect the formation of typhoons.	Week 4-5	
	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 2. participate in activities that lessen the risks brought by typhoons.	Discuss the different effects of typhoons such as flooding, landslide and storm surge.		
			Trace the path of typhoons that enter the Philippine Area of Responsibility (PAR) using a map and tracking data.	Week 5	S8ES-IIf-21
	characteristics of comets, meteors, and asteroids.	discuss whether or not beliefs and practices about comets and meteors have scientific basis.	Compare and contrast comets, meteors, and asteroids.	Week 6	S8ES-IIg-22
3rd	the particle nature of matter as basis for explaining properties, physical changes, and structure of substances and mixtures.	present how water behaves in its different states within the water cycle.	Explain the properties of solids, liquids, and gases based on the particle nature of matter	Week 1-2	S8MT-IIIa-b-8
			Explain the difference between an element and a compound	Week 3-4	
			Explain physical changes in terms of the arrangement and motion of atoms and molecules	Week 3-4	S8MT-IIIc-d-9
			Trace the development of the electronic structure of the atom.	Week 5	
	the identity of a substance according to its atomic structure.		Determine the number of protons, neutrons, and electrons in a particular atom	Week 6-7	S8MT-IIIe-f-10
	the periodic table of elements as an organizing tool to determine the chemical properties of elements.		Use the periodic table to predict the chemical behavior of an element.	Week 7-8	S8MT-IIIi-j-12
4th	1. the digestive system and its interaction with the circulatory, respiratory, and excretory systems in providing the body with nutrients for energy	present an analysis of the data gathered on diseases resulting from nutrient deficiency.	Explain ingestion, absorption, assimilation, and excretion.	Week 1	S8LT-IVa-13

	2. diseases that result from nutrient deficiency and ingestion of harmful substances, and their prevention and treatment.				
	1. how cells divide to produce new cells. 2. meiosis as one of the processes producing genetic variations of the Mende.	report on the importance of variation in plant and animal breeding.	Compare mitosis and meiosis, and their role in the cell-division cycle.	Week 2	S8LT-IVd-16
			Explain the significance of meiosis in maintaining the chromosome number.	Week 2	S8LT-IVe-17
			Predict phenotypic expressions of traits following simple patterns of inheritance.	Week 3	S8LT-IVf-18
			Apply understanding of biotechnology used in the livelihood, promotion of food production and health.	Week 3	S8LT-IVf- 18
	1. the concept of a species. 2. the species as being further classified into a hierarchical taxonomic system.	report (e.g., through a travelogue) on the activities that communities engage in to protect and conserve endangered and economically important species.	Explain the concept of a species.	Week 4	S8LT-IVg-19
			Classify organisms using the hierarchical taxonomic system.	Week 4	S8LT-IVh-20
			Explain the advantage of high biodiversity in maintaining the stability of an ecosystem.	Week 5	S8LT-IVh-21
	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.	Describe the transfer of energy through the trophic levels.	Week 5	S8LT-IVi-22
			Analyze the roles of organisms in the cycling of materials.	Week 6	S8LT-IVi-23
			Explain how materials cycle in an ecosystem.	Week 6	S8LT-IVi-24
			Suggest ways to minimize human impact on the environment.	Week 7	S8LT-IVj-25

Grade level: 9
Subject: Science

Quarter	Content Standard *The learners demonstrate understanding of...*	Performance Standard *The learners should be able to...*	Most Essential Learning Competencies	DURATION	Kto12 CG Code
1st	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.	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.	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.	Week 1-2	S9LT-Ia-b-26
			Infer how one's lifestyle can affect the functioning of respiratory and circulatory systems.	Week 2	S9LT-Ic-27
	1. how genetic information is organized in genes on chromosomes 2. the different patterns of inheritance.		Explain the different patterns of non- Mendelian inheritance.	Week 3-4	S9LT-Id-29
			Explain how modern biotechnology works.	Week 3-4	S9LT-Id-29
			Propose how biotechnology can be applied in addressing certain situations or solving some problems (e.g. crimes).	Week 3-4	S9LT-Id-29
	how changes in the environment may affect species extinction.	make a multimedia presentation of a timeline of extinction of representative microorganisms, plants, and animals.	Relate species extinction to the failure of populations of organisms to adapt to abrupt changes in the environment.	Week 5	S9LT-Ie-f-30
	1. the structure and function of plant parts and organelles involved in photosynthesis. 2. the structure and function of mitochondrion as the main organelle.	design and conduct an investigation to provide evidence that plants can manufacture their own food.	Differentiate basic features and importance of photosynthesis and respiration.	Week 6-7	S9LT-Ig-j-31
2nd	1. the development of atomic models that led to the description of		Explain how the Quantum Mechanical Model of the atom describes the energies and positions of	Week 1	

	the behavior of electrons within atoms. 2. how atoms combine with other atoms by transferring or by sharing electrons 3. forces that hold metals together.		the electrons.		
			Illustrate Lewis theory of ionic and covalent bonding.		
	the type of bonds that carbon forms that result in the diversity of carbon compounds.		Recognize different types of compounds (ionic or covalent) based on their properties such as melting point, hardness, polarity, and electrical and thermal conductivity	Week 1	S9MT-IIb-14
			Predict the geometry of the molecules using the VSEPR model.	Week 2-3	
			Describe important hybrid orbitals and their shape.	Week 2-3	
			Write and name simple inorganic compounds.	Week 2-3	
			Explain how the structure of the carbon atom affects the type of bonds it forms	Week 4-5	S9MT-IIg-17
			Recognize the general classes and uses of organic compounds	Week 6	S9MT-IIh-18
	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.	Use the mole concept to express mass of substances	Week 7	S9MT-IIi-19
			Determine the percentage composition of a compound given its chemical formula and vice versa.	Week 8	S9MT-IIj-20
3rd	volcanoes found in the Philippines.		Describe the different types of volcanoes and volcanic eruption.	Week 1	
			Explain what happens when volcanoes erupt.	Week 2	S9ES -IIIb-28
			Illustrate how energy from volcanoes may be tapped for human use.	Week 3-4	S9ES -IIIc-d-29
	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.	Explain how different factors affect the climate of an area.	Week 5-6	S9ES -IIIe-30
			Describe certain climatic phenomena that occur on a global level.	Week 6-7	S9ES -IIIf-31
	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	Show which constellations may be observed at different times of the year using models.	Week 8-9	S9ES -IIIj-33

		constellations and astrology have scientific basis.			
			Identify and compare the different types of galaxies.	Week 8-9	
4th	projectile motion, impulse and momentum, and conservation of linear momentum.	propose ways to enhance sports related to projectile motion.	Describe the horizontal and vertical motions of a projectile	Week 1	S9FE-IVa-34
			Investigate the relationship between the angle of release and the height and range of the projectile	Week 1-2	S9FE-IVa-35
			Predict projectile motion using kinematic equations.		
			Relate impulse and momentum to collision of objects (e.g., vehicular collision)	Week 3	S9FE-IVb-36
			Infer that the total momentum before and after collision is equal	Week 3	S9FE-IVb-37
	conservation of mechanical energy.	create a device that shows conservation of mechanical energy.	Perform activities to demonstrate conservation of mechanical energy	Week 4	S9FE-IVd-40
	The relationship among heat, work, and efficiency.	analyze how power plants generate and transmit electrical energy.	Construct a model to demonstrate that heat can do work	Week 5	S9FE-IVe-42
			Explain how heat transfer and energy transformation make heat engines work.	Week 6	S9FE-IVg-45
	generation, transmission, and distribution of electrical energy from power plants (hydroelectric, geothermal, wind, nuclear) to home.		Explain how electrical energy is generated, transmitted, and distributed.	Week 6-7	S9FE-IVh-j-46
			Explain the functions of resistor, capacitor, diode, semi-conductor and inductor in an electronic device.	Week 7	

Grade level: 10
Science

Quarter	Content Standard *The learners demonstrate understanding of...*	Performance Standard *The learners should be able to...*	Most Essential Learning Competencies	DURATION	Kto12 CG Code
1st	the relationship among the locations of volcanoes, earthquake epicenters, and mountain ranges.	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.	Describe and relate the distribution of active volcanoes, earthquake epicenters, and major mountain belts to Plate Tectonic Theory.	Week 1-3	
			Describe the different types of plate boundaries.	Week 4	S10ES–Ia-j-36.2
			Explain the different processes that occur along the plate boundaries.	Week 5-6	S10ES–Ia-j-36.3
			Describe the possible causes of plate movement.	Week 5-6	S10ES–Ia-j-36.5
			Enumerate the lines of evidence that support plate movement.	Week 7	S10ES–Ia-j-36.6
			Relate rock cycle to plate boundaries.	Week 7	
			Analyze a simplified Philippine tectonic map.	Week 8	
			Relate geologic processes that occur in the Philippines to its tectonic setting.	Week 8	S9ES –Ia-j- 36.6
2nd	the different regions of the electromagnetic spectrum.		Compare the relative wavelengths of different forms of electromagnetic waves	Week 1-2	S10FE-IIa-b-47
			Cite examples of practical applications of the different regions of EM waves, such as the use of radio waves in telecommunications	Week 3-4	S10FE-IIc-d-48
			Explain the effects of EM radiation on living things and the environment	Week 5	S10FE-IIe-f-49
	the images formed by the different types of mirrors and lenses.		Predict the qualitative characteristics (orientation, type, and magnification) of images formed by plane and curved mirrors and lenses	Week 6-7	S10FE-IIg-50
			Identify ways in which the properties of mirrors and lenses determine their use in optical instruments (e.g., cameras and binoculars)	Week 8	S10FE-IIh-52
	the relationship between electricity and magnetism in electric motors		Explain the operation of a simple electric motor and generator	Week 9	S10FE-IIj-54

	and generators.				
3rd	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.		Explain the role of hormones involved in the female and male reproductive systems.	Week 1	S10LT-IIIb-34
			Describe the feedback mechanisms involved in regulating processes in the female reproductive system (e.g., menstrual cycle).	Week 2	S10LT-IIIc-35
			Describe how the nervous system coordinates and regulates these feedback mechanisms to maintain homeostasis.	Week 3	S10LT-IIIc-36
	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.		Explain how protein is made using information from DNA.	Week 4	S10LT-IIId-37
			Explain how mutations may cause changes in the structure and function of a protein	Week 4	S10LT-IIIe-38
			Discuss some social and ethical issues associated with biotechnology.	Week 4-5	S10LT-IIIe- 38
	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.	Explain how fossil records, comparative anatomy, and genetic information provide evidence for evolution.	Week 5	S10LT-IIIf-39
	1. the influence of biodiversity on the stability of ecosystems.		Explain the occurrence of evolution.	Week 6	S10LT-Iigb-40
			Explain how species diversity increases the probability of adaptation and survival of organisms in changing environments.	Week 7	S10LT-IIIh-41
	2. an ecosystem as being capable of supporting a limited number of organisms.		Explain the relationship between population growth and carrying capacity.	Week 7	S10LT-IIIi-42
4th	How gases behave based on the motion and relative distances between gas particles.		Investigate the relationship between: 1 volume and pressure at constant temperature of a gas 2 volume and temperature at constant pressure of a gas 3 explains these relationships using the kinetic molecular theory 4 volume of the gas and the amount of the gas	Week 1-2	S9MT-IIj-20

			present 5 of the combination of P, V, T, and n 6 the sum of the partial pressure of gases 7 the rate of effusion of a gas and the mass of its particles		
	the structure of biomolecules, which are made up mostly of a limited number of elements, such as carbon, hydrogen, oxygen, and nitrogen.		Recognize the major categories of biomolecules such as carbohydrates, lipids, proteins, and nucleic acids	Week 3	S10MT-IVc-d-22
			Determine the presence of specific. biomolecules in common food items and organic materials	Week 3-4	
			Represent the structures of biomolecules such as carbohydrates, lipids, proteins, and nucleic acids	Week 3-4	
	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,	Discuss the different evidences of a chemical change.	Week 5	
			Apply the principles of conservation of mass to chemical reactions	Week 5	S10MT-IVe-g-23
			State the factors that affect the reaction rate and how these factors affect the rate of reaction.	Week 6	
			Explain how the factors affecting rates of chemical reactions are applied in food preservation and materials production, control of fire, pollution, and corrosion	Week 6	S10Mt-IVh-j-24
			Write and balance chemical equations by inspection.	Week 7-8	
			Relate mass-mole-number-volume of reactants and products in a chemical reaction.	Week 7-8	

Sources:

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