

Scope and Sequence Chart

Title	Objectives	K-12 Curriculum Standards	K-12 Learning Competencies	Performance Standard	Strategies/Activities	Learning Output
Unit 1 Earth Science: Concepts and Implications						
Chapter 1: A Guided Tour of the Universe	<ul style="list-style-type: none"> • Critically discuss the different theories regarding the formation of the universe and the solar system • Compare and contrast the distinguishing features of each planet in the solar system • Describe the four spheres that comprise Earth's natural environment • Define the term <i>system</i> and explain why Earth is considered as one • Identify and differentiate the layers of the Earth 	The learners demonstrate understanding of: <ul style="list-style-type: none"> • the formation of the universe and the solar system • the subsystems (geosphere, hydrosphere, atmosphere, and biosphere) • the Earth's internal structure 	<ul style="list-style-type: none"> • State the different hypotheses and theories explaining the origin of the universe • Describe the different hypotheses explaining the origin of the solar system • Recognize the uniqueness of Earth, being the only planet in the solar system with properties necessary to support life • Explain that the Earth consists of four subsystems, across whose boundaries matter and energy flow • Explain the current advancements/ information on the solar system • Show the contribu- 	<ul style="list-style-type: none"> • Discuss the theories on the formation of the universe and the solar system • Make a concept map and use it to explain how the geosphere, hydrosphere, atmosphere, and biosphere are interconnected 	<ul style="list-style-type: none"> • bubble speech • concept mapping • video presentations • picture presentations • unlocking of terms • 3-2-1 summary • chapter wrap-up 	<ul style="list-style-type: none"> • tables • concept maps • timeline blog • summative assessment

			<p>tions of personalities/ people on the understanding of earth systems</p> <ul style="list-style-type: none"> Identify and differentiate the layers of the Earth (crust, mantle, core) 			
<p>Chapter 2: Earth's Materials and Processes</p>	<ul style="list-style-type: none"> Identify and classify rocks and minerals based on their physical and chemical properties Cite and explain some pieces of evidence for the occurrence of plate tectonics Compare endogenic process with exogenic process Explain the process of weathering Enumerate the agents of erosion Trace earth's formation and history by using marker fossils and elemental dating techniques 	<p>The learners demonstrate an understanding of:</p> <ul style="list-style-type: none"> the three main categories of rocks the origin and environment of formation of common minerals and rocks geologic processes that occur on the surface of the Earth such as weathering, erosion, mass wasting, and sedimentation (include the role of ocean basins in the formation of sedimentary rocks) geologic processes that occur within the Earth the folding and faulting of rocks plate tectonics 	<ul style="list-style-type: none"> Identify common rock-forming minerals using their physical and chemical properties Classify rocks into igneous, sedimentary, and metamorphic Describe how rocks undergo weathering Explain how the products of weathering are carried away by erosion and deposited elsewhere Make a report on how rocks and soil move downslope due to the direct action of gravity Describe where the Earth's internal heat comes from Describe how mag- 	<ul style="list-style-type: none"> Conduct a survey to assess the possible geologic hazards that a community may experience 	<ul style="list-style-type: none"> KWL Chart diagram analysis vocabulary check video presentations picture presentations unlocking of terms chapter wrap-up 	<ul style="list-style-type: none"> KWL Chart concept maps research write-up summative assessment

			<p>ma is formed (magmatism)</p> <ul style="list-style-type: none"> • Describe what happens after magma is formed (plutonism and volcanism) • Describe the changes in the mineral components and textures of rocks due to changes in pressure and temperature (metamorphism) • Compare and contrast the formation of the different types of igneous rocks • Describe how rocks behave under different types of stress such as compression, pulling apart, and shearing • Explain how the continents drift • Cite evidence that support continental drift • Explain how the movement of plates leads to the formation of folds and faults • Explain how the sea 			
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			<p>floor spreads</p> <ul style="list-style-type: none"> • Describe the structure and evolution of ocean basins • Explain how the movement of plates leads to the formation of folds and faults • Describe how layers of rocks (stratified rocks) are formed • Describe the different methods (relative and absolute dating) to determine the age of stratified rocks • Explain how relative and absolute dating were used to determine the subdivisions of geologic time • Describe how marker fossils (also known as guide fossils) are used to define and identify subdivisions of the geologic time scale • Describe how the Earth's history can be interpreted from 			
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			the geologic time scale			
<p>Chapter 3: Natural Hazards: Mitigation and Adaptation</p>	<ul style="list-style-type: none"> Identify the hazards that may be encountered in the event of earthquakes, volcanic eruptions, tsunamis and other natural hazards Determine the areas that are prone to natural hazards Identify human activities that trigger or speed up catastrophes Cite practical ways to mitigate the impact of natural calamities 	<p>The learners demonstrate an understanding of:</p> <ul style="list-style-type: none"> the different hazards caused by geological processes (earthquakes, volcanic eruptions, and landslides) the different hazards caused by hydrometeorological phenomena (tropical cyclones, monsoons, floods, and tornadoes (or <i>ipo-ipo</i>) the different hazards caused by coastal processes (waves, tides, sea-level changes, crustal movement, and storm surges) 	<ul style="list-style-type: none"> Describe the various hazards that may happen in the event of earthquakes, volcanic eruptions, and landslides Use hazard maps to identify areas prone to hazards brought about by earthquakes, volcanic eruptions, and landslides Identify human activities that speed up or trigger landslides Give practical ways of coping with geological hazards caused by earthquakes, volcanic eruptions, and landslides Suggest ways to help lessen the occurrence of landslides in your community Describe the various hazards that may happen in the wake 	<ul style="list-style-type: none"> Conduct a survey to assess the possible geologic hazards that a community may experience (<i>Note:</i> Select this performance standard if your school is in an area near fault lines, volcanoes, and steep slopes.); or Conduct a survey or design a study to assess the possible hydrometeorological hazards that a community may experience (<i>Note:</i> Select this performance standard if your school is in an area that is frequently hit by tropical cyclones and is usually flooded) 	<ul style="list-style-type: none"> concept check concept mapping news clips video presentations chapter wrap-up 	<ul style="list-style-type: none"> concept maps brochure summative assessment

			<p>of tropical cyclones, monsoons, floods, or <i>ipo-ipo</i></p> <ul style="list-style-type: none"> • Use hazard maps to identify areas prone to hazards brought about by tropical cyclones, monsoons, floods, or <i>ipo-ipo</i> • Give practical ways of coping with hydrometeorological hazards caused by tropical cyclones, monsoons, floods, or <i>ipo-ipo</i> • Describe how coastal processes result in coastal erosion, submersion, and saltwater intrusion • Identify areas in your community prone to coastal erosion, submersion, and saltwater intrusion • Give practical ways of coping with coastal erosion, submersion, and saltwater intrusion • Cite ways to prevent 			
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			or mitigate the impact of land development, waste disposal, and construction of structures on coastal processes			
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Unit 2

Life Science: Studying the Reasons Behind Life Existence

<p>Chapter 4: Introduction to Life Science</p>	<ul style="list-style-type: none"> Trace the historical development of the concept of life Enumerate the origin of the first life-forms Identify the unifying themes in the study of life 	<p>The learners demonstrate an understanding of:</p> <ul style="list-style-type: none"> the historical development of the concept of life the origin of the first life-forms the unifying themes in the study of life 	<ul style="list-style-type: none"> Explain the evolving concept of life based on emerging pieces of evidence Describe classic experiments that model conditions that may have enabled the first life-forms to evolve Describe how unifying themes (e.g., structure and function, evolution, and ecosystems) in the study of life show connections among living things and how the life-forms interact with one another and with their environment Differentiate prokaryotic from eukaryotic cells Enumerate cell structures/organelles and describe their functions Identify which structures are unique to plant cells, animal 	<ul style="list-style-type: none"> Value life by taking good care of humans, plants, and animals 	<ul style="list-style-type: none"> 3-2-1 chart mind-mining activity table completion mind map picture presentations chapter wrap-up 	<ul style="list-style-type: none"> tables geological time scale article summative assessment
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			cells, and bacteria			
Chapter 5: Energy Flow in the Living System	<ul style="list-style-type: none"> Describe how cells carry out life functions Understand how primary producers capture light and convert it into energy Trace the flow of energy from the environment to different life systems 	<p>The learners demonstrate an understanding of:</p> <ul style="list-style-type: none"> the cell as the basic unit of life how photosynthetic organisms capture light energy to form sugar molecules how organisms obtain and utilize energy 	<ul style="list-style-type: none"> Explain how cells carry out functions required for life Explain how photosynthetic organisms use light energy to combine carbon dioxide and water to form energy-rich compounds Trace the energy flow from the environment to the cells Describe how organisms obtain and utilize energy Recognize that organisms require energy to carry out functions required for life 	<ul style="list-style-type: none"> Show the complementary relationship between photosynthesis and cellular respiration 	<ul style="list-style-type: none"> web mapping picture analysis picture presentations unlocking of terms chapter wrap-up 	<ul style="list-style-type: none"> web map infographic poster summative assessment
Chapter 6: Continuity of Life	<ul style="list-style-type: none"> Discuss different modes of plant reproduction Enumerate different plant organs used for reproduction Discuss differences between sexual and asexual modes of re- 	<p>The learners demonstrate an understanding of:</p> <ul style="list-style-type: none"> plant and animal reproduction how genes work how genetic engineering is used to produce novel products 	<ul style="list-style-type: none"> Describe the different ways of how plants reproduce Illustrate the relationships among structures of flowers, fruits, and seeds Describe the different ways of how representative animals reproduce 	<ul style="list-style-type: none"> Conduct a survey of products containing substances that can trigger genetic disorders 	<ul style="list-style-type: none"> pedigree chart analysis concept-checklist chart Venn diagram analysis concept mapping picture presentations unlocking of 	<ul style="list-style-type: none"> Venn diagram concept map brochure summative assessment

	<p>production in animals</p> <ul style="list-style-type: none"> • Discuss the importance of genes and their role in the transmission of genetic information • Enumerate day-to-day applications of modern biotechnology • List the major differences between plant and animal reproduction 		<ul style="list-style-type: none"> • Explain how the information in the DNA allows the transfer of genetic information and synthesis of proteins • Describe the process of genetic engineering • Describe how genetic engineering is used to produce novel products • Conduct a survey of the current uses of genetically modified organisms • Evaluate the benefits and risks of using GMOs 		<p>terms</p> <ul style="list-style-type: none"> • chapter wrap-up 	
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Unit 3

Animal Forms and Functions: Keys to Survival and Success

<p>Chapter 7: The Integumentary, Skeletal, and Muscular Systems</p>	<ul style="list-style-type: none"> • Critically discuss the importance of the integument and its derivatives • Give examples of specialized integuments present among representative animals • Compare and contrast the distinguishing features of bones that comprise the axial and appendicular skeletons • Give examples of different support structures present in different animals • Differentiate the types of muscle tissues • Discuss the step-by-step process involved in muscle movement 	<p>The learners demonstrate an understanding of:</p> <ul style="list-style-type: none"> • the body in motion 	<ul style="list-style-type: none"> • Explain the different metabolic processes involved in the various organ systems • Describe the general and unique characteristics of the different organ systems in representative animals • Analyze and appreciate the functional relationships of the different organ systems in ensuring animal survival 	<ul style="list-style-type: none"> • Make a presentation of some diseases that are associated with the integumentary, skeletal, and muscular systems 	<ul style="list-style-type: none"> • predict-observe-explain • inferring • compare and contrast • concept mapping • picture presentation • video presentation • chapter wrap-up 	<ul style="list-style-type: none"> • POE chart • Venn diagram • concept map • multimedia presentation • summative assessment
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<p>Chapter 8: The Excretory System and Homeostasis</p>	<ul style="list-style-type: none"> • Critically discuss the importance of kidneys • Give examples of specialized excretory organs present in representative animals • Learn to differentiate the excretory organs and structures of aquatic and terrestrial animals • Know the importance of thermoregulation in the maintenance of normal bodily functions 	<p>The learners demonstrate an understanding of:</p> <ul style="list-style-type: none"> • the need for homeostasis • salt and water balance and waste removal 	<ul style="list-style-type: none"> • Explain the different metabolic processes involved in the various organ systems • Describe the general and unique characteristics of the different organ systems in representative animals • Analyze and appreciate the functional relationships of the different organ systems in ensuring animal survival 	<ul style="list-style-type: none"> • Make a presentation of some diseases that are associated with the excretory system 	<ul style="list-style-type: none"> • situation analysis • labeling activity • unlocking of terms • chapter wrap-up 	<ul style="list-style-type: none"> • learning log • multimedia presentation • summative assessment
<p>Chapter 9: The Circulatory and Respiratory Systems</p>	<ul style="list-style-type: none"> • Enumerate all the components of blood and give their corresponding functions • Identify the different parts of the heart and give their roles in the transport of blood throughout the body • Compare and 	<p>The learners demonstrate an understanding of:</p> <ul style="list-style-type: none"> • gas exchange with the environment • circulation: the internal transport system 	<ul style="list-style-type: none"> • Explain the different metabolic processes involved in the various organ systems • Describe the general and unique characteristics of the different organ systems in representative animals • Analyze and appreciate the functional relationships of the 	<ul style="list-style-type: none"> • Make a presentation of some diseases that are associated with the circulatory and respiratory systems 	<ul style="list-style-type: none"> • KWLH chart completion • pie chart analysis • concept mapping • laboratory activity • table completion • word analogy • video presentation 	<ul style="list-style-type: none"> • KWLH chart • concept map • laboratory report • tables • brochure • summative assessment

	<p>contrast the circulatory systems of representative animals</p> <ul style="list-style-type: none"> • Trace the development of respiratory organs from the simplest to the most advanced animal forms • Give the importance of respiratory pigments in the transport of oxygen throughout the body 		<p>different organ systems in ensuring animal survival</p>		<ul style="list-style-type: none"> • unlocking of terms • chapter wrap-up 	
<p>Chapter 10: Digestion and Nutrition</p>	<ul style="list-style-type: none"> • Trace the development of food-capture techniques used by different animal groups • Identify the different parts of the digestive system and understand their functions • Compare and contrast the digestive systems of different animal groups 	<p>The learners demonstrate an understanding of:</p> <ul style="list-style-type: none"> • nutrition: getting food to cells 	<ul style="list-style-type: none"> • Explain the different metabolic processes involved in the various organ systems • Describe the general and unique characteristics of the different organ systems in representative animals • Analyze and appreciate the functional relationships of the different organ systems in ensuring animal survival 	<ul style="list-style-type: none"> • Make a presentation of some diseases that are associated with the digestive system 	<ul style="list-style-type: none"> • star mapping • concept mapping • laboratory activity • table completion • video presentation • chapter wrap-up 	<ul style="list-style-type: none"> • star map • flow chart • concept map • pledge • laboratory report • tables • web page banner • summative assessment

	<ul style="list-style-type: none"> Enumerate the different processes involved in the digestion of food 					
Chapter 11: The Nervous System and Sensory Organs	<ul style="list-style-type: none"> Explain the hierarchical organization of the nervous system from a single neuron to the central nervous system Identify the parts of the neuron and give their functions Give the importance of the myelin sheath and its role in the conduction of nerve signals Identify the different parts of the brain and give their functions Differentiate thermos-reception, mechano-reception, photo-reception, and chemo-reception 	The learners demonstrate an understanding of: <ul style="list-style-type: none"> the nervous system 	<ul style="list-style-type: none"> Explain the different metabolic processes involved in the various organ systems Describe the general and unique characteristics of the different organ systems in representative animals Analyze and appreciate the functional relationships of the different organ systems in ensuring animal survival 	<ul style="list-style-type: none"> Make a presentation of some diseases that are associated with the nervous system 	<ul style="list-style-type: none"> do and learn diagram analysis phylogenetic tree analysis reading picture analysis matching activity word analogy video presentation chapter wrap-up 	<ul style="list-style-type: none"> flow chart concept map tables crossword puzzle summative assessment

<p>Chapter 12: The Immune System</p>	<ul style="list-style-type: none"> • Appreciate and determine the different “check-points” that the body uses to effectively avoid disease • Differentiate immediate-but-general response from slow-but-specific immune response • Understand that the immune system has a form of “memory” that help improve immunity to pathogens 	<p>The learners demonstrate an understanding of:</p> <ul style="list-style-type: none"> • the immune system: defense from disease 	<ul style="list-style-type: none"> • Explain the different metabolic processes involved in the various organ systems • Describe the general and unique characteristics of the different organ systems in representative animals • Analyze and appreciate the functional relationships of the different organ systems in ensuring animal survival 	<ul style="list-style-type: none"> • Make a presentation of some diseases that are associated with the immune system 	<ul style="list-style-type: none"> • concept mapping • picture analysis • reading • video presentation • chapter wrap-up 	<ul style="list-style-type: none"> • concept map • illustrations • poster • summative assessment
<p>Chapter 13: The Endocrine System</p>	<ul style="list-style-type: none"> • Determine what several bodily functions are regulated by hormonal release • Infer that hormonal release can be divided into two types depending on the proximity of its effect • Understand that the body has a feedback mecha- 	<p>The learners demonstrate an understanding of:</p> <ul style="list-style-type: none"> • how hormones govern body activities 	<ul style="list-style-type: none"> • Explain the different metabolic processes involved in the various organ systems • Describe the general and unique characteristics of the different organ systems in representative animals • Analyze and appreciate the functional relationships of the different organ systems 	<ul style="list-style-type: none"> • Make a presentation of some diseases that are associated with the endocrine system 	<ul style="list-style-type: none"> • table completion • word analogy • situation analysis • picture analysis • reading • chapter wrap-up 	<ul style="list-style-type: none"> • table • PowerPoint presentation • summative assessment

	nism in order to increase or decrease hormonal regulation		tems in ensuring animal survival			
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Unit 4
The Living Planet

<p>Chapter 14: Plant Survival</p>	<ul style="list-style-type: none"> • Discuss the various parts of the plant body • Discuss the structure and function of plant tissues • Distinguish between primary and secondary growths • Differentiate the structures of leaves, stems, and roots in monocots and dicots 	<p>The learners demonstrate an understanding of:</p> <ul style="list-style-type: none"> • plant form and function • plant growth and development 	<ul style="list-style-type: none"> • Describe the structure and function of the different plant organs • Explain the different metabolic processes involved in the plant organ systems 	<ul style="list-style-type: none"> • Design a setup on plant propagation using methods such as hydroponics and aeroponics 	<ul style="list-style-type: none"> • star mapping • decoding • nature walk • word analysis • pair-share • laboratory activity • chapter wrap-up 	<ul style="list-style-type: none"> • star map • laboratory report • tables • plant design • summative assessment
<p>Chapter 15: The Process of Evolution: The Constancy of Change</p>	<ul style="list-style-type: none"> • List the different concepts that are related to the support and criticism on evolution • Explain how organisms have changed through time because of adaptations to changes in the environment • Describe how the present system of classification of organisms takes 	<p>The learners demonstrate an understanding of:</p> <ul style="list-style-type: none"> • the evidence for evolution • the origin and extinction of species 	<ul style="list-style-type: none"> • Describe evidence of evolution such as homology, DNA/protein sequences, plate tectonics, fossil records, embryology, and artificial selection/agriculture • Explain how populations of organisms have changed and continue to change over time, showing patterns of descent with modification 	<ul style="list-style-type: none"> • Design a poster that traces the evolutionary changes that occurred in a crop plant through domestication 	<ul style="list-style-type: none"> • decoding • word analogy • reading • picture analysis • video presentation • pair-share • chapter wrap-up 	<ul style="list-style-type: none"> • table • poster • summative assessment

	into consideration evolutionary relationships		from common ancestors to produce the organismal diversity observed today <ul style="list-style-type: none"> Describe how the present system of classification of organisms is based on evolutionary relationships 			
Chapter 16: Interactions and Interdependence	<ul style="list-style-type: none"> Describe the principles that govern ecosystem Discuss the characteristics of different terrestrial biomes Explain the defining characteristics among different types of aquatic ecosystems Identify several unique features of terrestrial and aquatic ecosystems in the Philippines Discuss the impact of humans on the ecosystem 	The learners demonstrate an understanding of: <ul style="list-style-type: none"> the principles of an ecosystem biotic potential and environmental resistance terrestrial and aquatic ecosystems how human activities affect the natural ecosystem 	<ul style="list-style-type: none"> Describe the principles of ecology Categorize the different biotic potential and environmental resistance (e.g., diseases, availability of food, and predators) that affect population explosion Describe how the different terrestrial and aquatic ecosystems are interlinked 	<ul style="list-style-type: none"> Prepare an action plan that contains mitigation measures to address current environmental concerns and challenges in the community 	<ul style="list-style-type: none"> decoding word connect diagram analysis reading concept mapping picture analysis video presentation chapter wrap-up 	<ul style="list-style-type: none"> flow chart concept maps poster summative assessment