



GENERAL SCIENCE

Grade 11

**Three-Term Budget Of Work (BOW)
for Learning Competencies**

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Three-Term Budget Of Work For Learning Competencies

First Term	
Content Standard	• Physics principles apply to numerous aspects of everyday living. • Understanding linear and angular quantities to describe motion helps in the design of efficient machines. • The efficiency of simple and compound machines can be improved by applying basic physics principles. • Hydraulic systems exploit the relationship between pressure, force, and area to multiply forces and perform tasks. • Analysis of electricity generation, consumption patterns, and energy-efficiency practices can lead to better energy supply and management. • An understanding of the properties of light and sound leads to their safe and productive application. • Past research in the field of chemistry provides the foundations for the development of helpful products and processes. • Household and personal care products contain chemical substances that determine their properties and guide their proper use and disposal.
Performance Standard	By the end of the term, learners identify general physics principles and their applications in daily life. They use scientific principles to solve problems, make informed decisions, and illustrate the applications of physics for self, society, and the environment. They design simple and compound machines and hydraulic systems to demonstrate applications of force, torque, center of mass, and hydraulic-related principles. They evaluate energy-efficient practices in electricity supply and consumption at home and local businesses and explore the advantages and drawbacks of light and sound in medical imaging, security, communication, and entertainment.

Week	Learning Competency
1	Physics in Daily Life Identify various ways physics enhances our quality of life across different areas, including household activities, health and safety, work productivity, and leisure.
1 to 2	Applications of Translational and Rotational Motion - Compare and contrast translational and rotational motion in terms of their respective linear and angular quantities. - Demonstrate through simple activities the relationship between linear and angular quantities. - human movement (e.g., exercises, dance, and gymnastics) - ergonomic designs (e.g., buildings, vehicles, furniture, and toys)
2 to 3	Simple and Compound Machines - Apply concepts of translational and rotational motion to design and build prototypes of efficient simple and compound machines. - Explain the characteristics of efficient simple and compound machines.
3 to 4	The Physics of Fluids - Explain how simple hydraulic systems use fluid principles to enhance simple and compound machines. - Identify applications of Archimedes' principle and Pascal's principle in various contexts, such as home, community, businesses, and transportation. - Design simple practical activities or models to determine how variations in physical properties, such as shape, mass, and volume, affect an object's ability to float in a fluid.
5 to 6	Utilization of Electricity - Discuss safety practices in dealing with electrical hazards, such as overloading, damaged insulation, damp electrical conditions, faulty wiring, and electrocution. - Propose ways to minimize energy loss and energy wastage in homes, schools, local businesses, and other parts of society.

7 to 8	Understanding and Using Light and Sound • Discuss properties of light and sound waves related to communications technology, navigation, medicine, and entertainment; and • Identify innovations related to sound and light, such as soundproofing, sound amplifiers, LEDs, holograms, and lasers.
9	Chemists and How they Have Made an Impact on our Lives • Use information from secondary resources to report how Louis Pasteur combined research from the fields of chemistry and biology, which has helped scientists to understand the cause of some diseases and prevent infection.
10	Application of Chemical Substances in Household and Personal Care Products • Construct a table using product labels that describe the function of the different substances (elements or compounds) present in household products such as those in bleach, detergents, baking powder, and personal care products such as shampoo, soaps, and toothpaste. • Explain the benefits and potential risks of using and disposing of household and personal care products, by considering their chemical composition, environmental impact, and human health effects, referring to the Department of Trade and Industry (DTI), Food and Drugs Authority (FDA), and the Department of Environment and Natural Resources (DENR).
Suggested Learning Activities	• Physics in Real Life: Quality of Life Mapping – Learners will analyze everyday situations and identify how physics concepts improve quality of life in four key areas: household, health and safety, work productivity, and leisure. • Move, Rotate, Relate! Physics of Motion in Life and Design – Learners will observe, perform, and analyze motions from everyday human movements and common ergonomic designs to identify translational vs. rotational motion and relate linear quantities (displacement, velocity, acceleration) to angular quantities (angular displacement, angular velocity, angular acceleration). • Design–Build–Test: Efficient Machines in Motion – Learners will design, construct, and test a working prototype of a simple or compound machine using low-cost materials. They will apply concepts of translational motion (linear displacement, force, work) and rotational motion (torque, angular motion, radius) to

	improve the efficiency of their machine. • Syringe Hydraulics: Force Multiplication in Action – Learners will build and test a simple hydraulic system using syringes and tubing to investigate how pressure is transmitted in fluids and how changing the cross-sectional area affects the output force. • Power Smart: Analyzing Energy Use for Better Management – Learners will analyze electricity consumption data from a household, school, or simulated dataset to understand how electricity is generated and used and then propose energy-efficient practices to improve energy management. • Exploring Light and Sound in Everyday Applications – Learners will investigate how the properties of light and sound are applied in real-life technologies and assess safety considerations associated with their use. • Tracing Chemistry Discoveries to Modern Applications – Learners will investigate how historical chemistry research has led to the development of everyday products and processes, understanding the connection between foundational discoveries and practical applications. • Investigating the Chemistry of Household Products – Learners will analyze common household and personal care products to identify the chemical substances present, understand their properties, and determine safe usage and disposal practices.
Suggested Performance Tasks	• Design a model house that showcases how the physics principles behind rotational dynamics, energy efficiency, sound, and light can improve the ambiance and efficiency of Filipino homes.

Second Term	
Content Standard	• Chemical reactions are part of human activities and present in the environment. • Chemicals should be handled safely, and solutions can have beneficial and harmful environmental effects. • All levels of life have systems of related parts. • Structures and functions are related at all levels of the organization of life. • Cells carry out functions that enable organisms to survive. • Organ systems work together to carry out essential functions of an organism. • Climate change affects ecosystems and the organisms living in them. • Ecosystems are finite and have limited resources.
Performance Standard	By the end of the term, learners apply research skills to discover how scientists have impacted our lives. They recognize the significant role of different agencies in the Philippines, such as DOST and DTI, in scientific innovation and development. They show critical thinking in explaining the different substances in household and personal care products, including their benefits and potential risks of using and disposing of them. They demonstrate appropriate and safe handling and use of chemicals. They explain that chemical reactions occur in human activities and the environment, and that several chemical solutions pose a threat to the community. They use examples to describe the relationships among living systems and their components and how the structure of a part relates to its function. They explain the role of cells in perpetuating life and how organ systems work together to maintain optimal health. They conduct investigations on the effects of climate change on local ecosystems.
Week	Learning Competency
1 to 2	Chemical Reactions in Everyday Lives • Explain some of the common types of chemical reactions and provide examples for the following: decomposition, acid on carbonates, acids on metals, and combustion. • Identify the type of chemical reactions that occur in our daily activities, including baking, cleaning,

	and burning. • Use chemical equations to show biological and environmental processes such as photosynthesis and respiration. • Describe the chemical reactions that take place in our body cells, which are referred to as metabolism, and explain their significance.
3 to 4	Solutions in the Environment • Explain the characteristics of solutions and their examples in household products, industry, and environmental science; • Apply best practices in the proper handling, storage, and disposal of chemicals; • Investigate how much salt dissolved in water will prevent the growth of a simple garden plant; • Create a table to show how solutions of saltwater and wastewater can affect local ecosystems and recommend ways to minimize their negative impact on the environment.
5	Unifying Themes of Life Science • Explain using photographs or videos of simple plants or animals as examples how life forms operate as systems of related parts working together. • Create a diagram to show the relationship between the structural components of a biological system and their functions.
6	The Importance of Cells in Living Things • Describe how cells obtain nutrients from food and convert them into energy through cellular processes to sustain life in plants and animals.
7 to 8	Organ Systems Working Together • Explain how various plant organs interact to facilitate the transport of materials throughout the plant system. • Describe how a damaged part in a system affects the organism using the case of a torn ACL (skeletal and muscular) and an asthma attack (respiratory and circulatory). • Explain how the nervous and endocrine systems work together to regulate body temperature in response to stimuli. • Explain how vaccines work by relating to the functions of the immune system and lymphatic system

	in protecting an organism against infectious diseases.	
9 to 10	Philippine Ecosystems - Describe what is meant by the term 'climate change'. - Describe how biological systems respond to climate change and contribute to understanding its effects on living organisms in the Philippines. - Explain how climate change impacts Philippine ecosystems. - Propose ways to adapt and mitigate the impacts of climate change on local biodiversity. - Analyze information from secondary sources to evaluate the adverse effects of overpopulation locally and globally.	
Suggested Learning Activities		Observing Chemical Reactions in Everyday Life and the Environment – Learners will identify and analyze chemical reactions occurring in daily human activities and natural environmental processes, understanding their significance and impact. Exploring the Safe Use and Environmental Impact of Common Solutions – Learners will investigate how common chemical solutions are used safely and analyze their beneficial and harmful effects on the environment. Mapping Structure and Function Across Biological Systems – Learners will analyze biological systems at multiple levels (cellular, tissue, organ, organism) to understand how structures relate to their specific functions. Investigating Cell Functions and their Role in Survival – Learners will explore various cell structures and their functions, linking them to the survival of the organism. Simulating Interconnected Organ Systems – Learners will model how multiple organ systems interact to maintain life and carry out essential functions in an organism. Simulating the Impact of Climate Change on Ecosystems – Learners will analyze how climate change influences ecosystems and their organisms and understand the concept of finite resources within ecosystems.

Suggested Performance Tasks	• Look for household or personal care products and identify their active ingredients. Then, research each active ingredient by identifying its brief description, other uses, and potential impact on humans and the environment. • Create a presentation using chosen multimodal activities (e.g., forum, infographic, podcast, vlog, etc.) to effectively communicate key concepts about the effects of climate change on the local ecosystem in the learners' community.
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Third Term	
Content Standard	- Planet Earth is currently the only planet in the Solar System that can support life; and an appropriate amount of greenhouse gases helps regulate Earth's temperature, making it suitable for life. - The Philippines is a unique country in terms of its landforms, bodies of water, climate, and biodiversity. - Earth materials are commonly used in human activity and industry. - The Philippines is continuously shaped and reshaped by geologic and hydrometeorological processes. - Human activities have contributed to the modification of landforms and bodies of water. - Impacts of natural hazards need prevention and mitigation strategies and adaptive measures to reduce risks and strengthen resilience.
Performance Standard	By the end of the term, learners use evidence from secondary sources to explain the uniqueness of planet Earth compared to other planets in the Solar System. They use models to describe and illustrate the distinctiveness of the Philippine Archipelago, showing how islands are formed through geological processes. They investigate the properties of rocks, minerals, and soil and apply their findings to using earth materials in the Philippines. They integrate ideas, experiences, understanding, and skills to explain geological and hydrometeorological hazards affecting the Philippines. They propose sound, viable, and sustainable mechanisms for hazard mitigation and adaptation.
Week	Learning Competency
1 to 2	Uniqueness of the Planet Earth - Explain the characteristics of Earth that support life in comparison with the other planets of the Solar System. - Describe how the greenhouse effect regulates Earth's temperature, making it suitable for life.

3 to 4	Uniqueness of the Philippines • Demonstrate how the Philippine archipelago was formed. • Explain using suitable resources, including images, maps, and cross-sections the unique landforms, climate, and life forms of the Philippines Archipelago that have developed due to its geographical and geological location on Earth.
4 to 5	Uses of Earth Materials by People • Describe the distinctive properties and local availability of earth materials, including rocks, minerals, and soils, and how they are harnessed to support human activities and industries.
6 to 7	Geologic Processes and Hydrometeorological Processes That Shape the Philippines • Describe geological and hydrometeorological hazards, such as volcanic eruptions, earthquakes, tsunamis, typhoons, floods, and landslides, and slowly acting processes, such as soil erosion and saltwater intrusion.
8 to 10	Natural Hazards, Disasters, Prevention and Mitigation, Preparedness, and Adaptation • Use evidence from secondary resources to describe how human activities have contributed to the modification of landforms and bodies of water of the Philippines since the beginning of the Neolithic Period (~6,000 BCE). • Assess geological and hydrometeorological hazards (e.g., tropical cyclones, ipo-ipo, thunderstorms, coastal storm surges, and heat waves) in terms of risks and prevention and mitigation strategies. • Describe how the PAGASA iHEAT (Heat Index) maps provide Filipinos with the knowledge they need to take proactive measures to protect themselves from heat related illnesses. • Develop family preparedness plans and community-based disaster risk reduction and management plans to prepare for, respond to, and recover from geological and hydrometeorological hazards that affect the Philippines.
Suggested Learning Activities	• Modeling Greenhouse Gas Effects on Earth's Temperature – Learners will investigate how greenhouse gases regulate Earth's temperature and understand the conditions that make Earth suitable for life. • Exploring the Unique Geography and Biodiversity of the Philippines – Learners will investigate and analyze the unique physical features, climate patterns,

	and biodiversity of the Philippines and explain how these contribute to the country's ecological and cultural significance. • Exploring the Uses of Earth Materials in Daily Life and Industry – Learners will investigate different earth materials, identify their properties, and analyze how these properties make them suitable for specific human and industrial uses. • Modeling the Effects of Geologic and Hydrometeorological Processes on Philippine Landscapes – Learners will investigate how geologic (e.g., earthquakes, volcanic eruptions, tectonic movements) and hydrometeorological processes (e.g., typhoons, rainfall, flooding) continuously shape the Philippine landscape. • Analyzing Human Impacts and Resilience Strategies in Local Landscapes – Learners will examine how human activities modify landforms and water bodies, identify risks from natural hazards, and propose prevention, mitigation, and adaptive strategies to strengthen community resilience.
Suggested Performance Tasks	• Create a brochure to promote the importance of the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) and the Philippine Institute of Volcanology and Seismology (PHIVOLCS) to the local community in understanding and mitigating geological and hydrometeorological hazards.