

CURRICULUM

Grade-10-  
Biology

Cycle:Secondary  
Textbook: Life Science (National Textbook)

UNITS	Learning Outcomes
<p>I- Autotrophy and Photosynthesis</p> <p>-The chloroplast: Site of photosynthesis</p> <p>- Photosynthetic Gas Exchange</p>	<ul style="list-style-type: none"> <li>- Draw and label a chlorophyllic cell and a non-chlorophyllic cell</li> <li>- Differentiate between a chlorophyllic cell and a non-chlorophyllic cell</li> <li>- Know that starch synthesis takes place in chloroplasts</li> <li>- Know that carbon dioxide is absorbed and oxygen gas is released during cell repiration</li> <li>- Differentiate between cell respiration and photosynthesis</li> <li>- Know that phenolphthalein and cresol red are two indicators used to prove the absorption of carbon dioxide during photosynthesis and the release of carbon dioxide gas during cell respiration</li> </ul>
<p>II- Plant Supply with Raw Materials</p> <p>- Absorption of Water and Mineral Ions</p> <p>- Transport and Upward Movement of Crude Sap</p> <p>- The Xylem: Structures of Conduction of the Crude Sap</p> <p>-The Stomata: Site of Gas Exchange</p>	<ul style="list-style-type: none"> <li>- Know that root hairs are responsible for absorption</li> <li>- Know that potometer is an instrument used to measure the volume of water absorbed by a plant</li> <li>- Compare between the structure of a root hair and that of a plant cell</li> <li>- List the properties of root hairs which make them adapted for absorption</li> <li>- Know the importance of mycorrhizae for the growth of some trees as oak or pine trees</li> <li>- Know that water and minerals are carried upwards in a plant</li> <li>- Know that plasmodesmata are cytoplasmic bridges that allow cells to communicate together</li> <li>- List the factors that help in the upward movement of crude sap (root pressure, transpiration, cohesive forces, and adhesive forces)</li> <li>- Know that xylem are stem tubes that carry crude sap</li> <li>-Indicate the role of lignin in supporting xylem vessels</li> <li>- List the stages of xylem vessel formation</li> <li>- Specify that xylem vessels are dead structures</li> <li>- Know that stomata are openings in plant leaves that allow</li> </ul>

<p>III- The Use of Photosynthetic Products</p> <ul style="list-style-type: none"> <li>- Translocation and Composition of the Elaborated Sap</li> <li>- The Phloem: Structures of Conduction of the Elaborated Sap</li> <li>-The Use of the Synthesized Substances</li> </ul> <p>IV- Nervous Communication</p> <ul style="list-style-type: none"> <li>- Organization of the nervous system in the vertebrates</li> <li>- Organization of the nervous system in the invertebrates</li> <li>- Histology of the nervous system: The neuron: A functional Unit</li> </ul>	<p>gas exchange</p> <ul style="list-style-type: none"> <li>- Know that more stomata are present on the lower surface than on the upper surface of a leaf</li> <li>- Draw and label a stoma</li> <li>- List the factors that control the opening of stomata</li> </ul> <ul style="list-style-type: none"> <li>- Know that the matter synthesized in leaves is organic</li> <li>- Know that the organic matter is carried downwards</li> <li>- Differentiate between crude sap and elaborated sap</li> </ul> <ul style="list-style-type: none"> <li>- Know that phloem are living structures</li> <li>-Describe the structure of phloem vessels</li> <li>- Explain Double Coloration Technique that is used to locate xylem and phloem</li> <li>- Differentiate between xylem and phloem vessels</li> </ul> <ul style="list-style-type: none"> <li>- Explain the food tests used to identify the food rich in starch, oil, proteins, reducing sugar</li> <li>- Know that starch stored in grains is hydrolyzed to release energy for the embryo to grow</li> <li>- Organic matter synthesized in leaves is partly used for growth and partly stored to be later used for development and nutrition for man and other consumers.</li> </ul> <ul style="list-style-type: none"> <li>- Know that the vertebrates have a central nervous system and a peripheral nervous system</li> <li>-Know that the central nervous system is made up of the brain and the spinal cord</li> <li>- Know that the peripheral nervous system is made up of nerves</li> </ul> <ul style="list-style-type: none"> <li>- Differentiate between the nervous system of a vertebrate and that of an invertebrate</li> <li>- Know that the nervous system of an invertebrate is made up of ganglia and ganglionic chain</li> <li>- Know that the ganglia takes the role of the brain</li> </ul> <ul style="list-style-type: none"> <li>- Know that the spinal cord is made of gray matter and white matter</li> <li>-Know that the gray matter is made of cell bodies and non-myelinated nerve fibers</li> <li>- Know that white matter is made of myelinated nerve fibers</li> </ul> <ul style="list-style-type: none"> <li>- Know that the neuron is the structural and functional unit</li> </ul>
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<p>-From stimulus to response: Pathways and Nervous centers</p>	<p>of the nervous system</p> <ul style="list-style-type: none"> <li>- Know that the nerve is a bundle of nerve fibers</li> <li>- Know that neurons are classified according to job, function, and amount of myelin.</li> <li>- Know that myelin speeds up the transmission of the nerve message</li> </ul> <p>- Understand the experiments of Magendie done on spinal cord</p> <ul style="list-style-type: none"> <li>- Use the experiments to conclude that the dorsal root is sensory, while the ventral root is motor.</li> <li>- Use the experiments of degeneration to determine the location of cell bodies of nerve fibers of a spinal nerve.</li> <li>- Know what is the role of nerve center</li> <li>- Understand the meaning of a reflex arc</li> <li>- List the elements of the reflex arc</li> </ul>
<p>One way communication: Synapses</p>	<ul style="list-style-type: none"> <li>- Draw and label a microscopic section of the synapse</li> <li>- Describe the transmission of the nerve message at the level of the synapse</li> <li>- Define a neurotransmitter</li> <li>- Differentiate between an excitatory and an inhibitory synapse</li> <li>- Describe Otto Loewi experiment that led to the discovery of the chemical nature of the message at the level of the synapse</li> </ul>
<p>V- Hormonal Communication</p> <p>- The Thyroid: An Endocrine Gland</p>	<ul style="list-style-type: none"> <li>- Know what is an endocrine gland</li> <li>- Know what we mean by a hormone.</li> <li>- Understand that the endocrine glands are ductless glands</li> <li>- Know the effects of ablation of the thyroid gland in tadpoles and sheep</li> <li>- Compare the results of ablation of the thyroid gland in young sheep to the clinical observation done on man suffering from thyroid hypofunctioning</li> <li>- Understand the importance of iodine in thyroid functioning</li> <li>- Know that thyroidal extract and grafted thyroid gland have the same role of the thyroid gland</li> </ul>
<p>-Functional Characteristics of an Endocrine Gland</p>	<ul style="list-style-type: none"> <li>- Know the characteristics of thyroid gland that describe it as an endocrine gland</li> <li>- Know that target organs should have membrane receptors specific to a hormone</li> <li>- Know that the hormonal message is coded by the amount of hormone and the number of hormone receptors present on the target organ</li> </ul>

	<ul style="list-style-type: none"><li>- Know that the combination of the hormone with its receptor is temporary. They detach rapidly after the degradation of the hormonal molecule.</li><li>- Know that the effects of ablation may be corrected in two ways:<ul style="list-style-type: none"><li>- Grafting of the studied gland</li><li>- Hormonal injection</li></ul></li></ul>
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