

المادة: علوم الحياة

جدول يوجز الأهداف/المواضيع/المحاور/الدروس التي تمّ تعليق العمل بها أو إضافتها للعام الدراسي 2018-2019 استنادًا إلى التعميم الأخير رقم 2018/م/28 تاريخ 2018/5/21 وحتى صدور المناهج المطورة.

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2 nd Year Secondary –Science Series			
الملاحظات	الأهداف/المواضيع/المحاور/الدروس التي تم تعليق العمل بها حديثاً.	الأهداف/المواضيع/المحاور/الدروس التي أُضيفت حديثاً.	المحتوى
	<ul style="list-style-type: none"> - Know the diversity of the living world and classify the cells of living organisms as prokaryotes and eukaryotes. - Notice the complexity of eukaryotes and criteria of classification. - Deduce the notion of a species. - Identify the polymorphism of a population. - Notice that each individual in a species is original - Know that the building up of an organism and the maintenance of its characteristics constitute its biological identity. - Specify the notion of “identity markers”. - Notice that organogenesis, and growths require nutrients as a source of materials and energy. - Notice that most of the cells of the organism are being constantly renewed while their characteristics are conserved. - Notice that the cells of an organism contain the same genetic information that ensures the conservation of the biological identity during the development and the renewal of cells. 		<p>Functional characteristics of the systems of living things at the cellular level.</p> <p>1.1 Biological identity and genetic information.</p> <p>1.1.1 Diversity of organisms: prokaryotes and eukaryotes</p> <p>-The biosphere and its living things</p> <ul style="list-style-type: none"> - Biological identity of organisms

<p>1.2.4 Energy metabolism in Man..</p> <p>Nature and origins of energy metabolites.</p> <p>Various metabolites.</p> <p>Storing organs.</p> <p>The liver: the organ that regulates glycemia</p>	<ul style="list-style-type: none"> - Note that many cells are capable of using the various metabolites «glucose, fatty acids, amino acids»? - Note that the nerve cells and the blood cells use only glucose. - Compare the amount of glucose in the blood of a fasting individual and after a meal rich in carbohydrates. -Analyzing the composition of plasma metabolites. -Identify the organs that store glucose (liver, muscles, and adipose tissue). - Note that the primordial role of the liver is the continuous furnishing of glucose despite the irregular uptakes. - Note that the variation in the amount of glycogen in the liver is highly related to the nutritive uptake of carbohydrates. -Relate glycogenesis and glycogenolyses to the presence of enzymes in the liver. - Relate the metabolism of muscle fibers to their characteristics. -Note that the reserves of tryglycerides and of glycogen, allow the muscle to partially use the glucose in the blood. 		
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<p>• Restoring ATP in muscles</p> <p>Retaining to its initial state.</p>	<ul style="list-style-type: none"> - Know that the muscles are large consumers of ATP when they contract, but the reserves of ATP are very weak. - Relate the mechanical energy necessary for muscular contraction, to the direct conversion of chemical energy of ATP. - Note that during extrinsic but short exercises, ATP is restored almost instantaneously and anaerobically without the formation of lactic acid (use of phospho-creatine reserves). - Note that when extrinsic work is maintained for 1 to 2 minutes, the restoration of ATP is specially ensured by an anaerobic lactic metabolism (lactic acid fermentation). - Note that for extrinsic work of a long duration, aerobic metabolism (respiration) interferes for regenerating ATP. -Note that at the end of contraction, the muscle slowly retains its initial state by cellular respiration 		
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3 rd Year Secondary – Literature and humanities Series			
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	<p>The student should be able to:</p> <ul style="list-style-type: none"> - Recognize that social life involves inter-individual relations of diverse nature, and based on communication that may be expressed as aggressiveness, dominance and emotional reactions. - Understand that aggressiveness is a natural tendency to attack, which exists in the majority of species. - Take into account that aggressive behavior is linked to reality, innate disposition, and may result from frustration induced by an obstacle. - Point out that dominance is an individual tendency to control others behavior and establish and maintain a social structure based on a hierarchy. - Recognize that an individual is permanently subject to disturbances of various origins called stress, which constitute aggression towards his own organism. - Point out that too many situations may underlie stress. 		<p>2- Neurobiology, human behavior and health. 2.1 Social communication.</p> <p>-Aggressiveness</p> <p>-Dominance</p>

<p>-Emotional and stress reactions</p>		<ul style="list-style-type: none"> - Notice that the organism reacts to stress by visible, immediate, involuntary and adapted responses. - Take into account that the organism’s reaction towards stress is defense reactions which favor fight or flight. - Recognize that certain reactions towards stress concern the functioning of internal organs white others affect behavior. - Notice the existence of discreet responses in many situations of stress such as hormonal fluctuation. - Note that an organism reacts sometimes in an unfavorable manner when it is under intense stress. - Point out that regulatory and adapting reactions to stress involve intervention of sensory receptors, integrating nervous centers and effectors. - Notice that the nervous system and the hormonal one function together to face stress. - Point out that the hypothalamus plays and integrating role for the nervous and hormonal mechanisms. - A behavioral act, in response to aggression, involves both the nervous and endocrine system. - The elements which interfere in regulating and adapting reactions to stress which are sensory receptors (eyes, ears, skin sensory receptors, as well as the receptors for blood pressure), nervous centers in the brain and mainly in the limbic system (without going into details about the limbic system) and effector organs (facial muscles, blood vessels, glands, etc..) 	
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		<ul style="list-style-type: none">- The emotional response to transient stress like danger (fight or flight reaction) which is regulated by adrenaline secreted by the adrenal medulla gland. The latter is stimulated by nervous system (centers in the limbic system are involved).- Adrenaline favors the increase of the frequency of cardiac activity, the respiratory activity, and the increase of glucose concentration in blood and redistributes blood to muscles. All these consequences tend to provide muscles with sufficient glucose and oxygen gas so that muscle tissues undergo cellular oxidation to produce sufficient energy needed for flight reaction.- The emotional response to long term stress (suffering from chronic disease) which is regulated by Glucocorticoid hormones secreted by the adrenal cortex. The latter is stimulated by nerve centers in the limbic system. Glucocorticoid favors the increase in blood glucose level and lowers the excretion of water from the kidneys and has an anti-inflammatory effect that helps the organism in resisting aggression. If long term stress persists for long duration it results in decreasing the concentration of released glucocorticoids (exhaustion phase) which result in weak immunity and other health problems that might lead to death.	
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3 rd Year Secondary - Life Science Series			
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	<ul style="list-style-type: none"> - Notice that glycemia slightly fluctuates around an average value called glycemie constant. - Notice that glycemia is a state of dynamic equilibrium and that it is a parameter to be adjusted. - Discover the mechanism of glycogenogenesis in the liver. - Notice that the muscles store glucose in the form of glycogen and that the adipose tissues directly transform the glucose into lipids. - Compare the functioning conditions of the following organs: liver, muscles, and adipose tissues... - Know the mechanism of glycogenogenesis and of neo-glucogenesis. - Notice that only the liver is a glucose liberating organ, because the hepatic cells contain the enzyme glucose – 6n phosphatase. - Determine the predominant role of the pancreas (central organ of the regulating system) in the mechanism that controls the storing and he liberation of glucose. - Identify the histological structure of the pancreas and locate on this structure, the α and β cells of the islets of Langerhans. - Notice that the β cells elaborate and secrete insulin. 		<p>4- Systems of regulation and functional unity of the organism.</p> <p>4.1 Regulation of glycemia.</p> <p>4.1.1 Glycemia, a dynamic equilibrium.</p> <p>4.1.2 Regulating system of glycemia.</p> <p>- Hypoglycemic system.</p>

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<p>- Hyperglycemic system.</p>		<ul style="list-style-type: none"> - Know that insulin is a polypeptide formed from 51 amino acids distributed into two chains A and B united by sulfur bridges. Prove the hypoglycemic role of insulin. - Notice that the target cells of insulin have insulin-dependent specific membrane receptor. - Know that glucagon is a hyperglycemic polypeptide hormone formed of 29 amino acids and elaborated by α cells of the pancreas. - Notice that there are other hyperglycemic hormones in the organism. - Know that any system of regulation has a system to be regulated (here the maintenance of glycemia at a visible value of 1g/liter) and a regulating system. - Notice that any regulating system implies at least: receptors, a system of transmission of information and effector organs. - Draw a functional diagram of the organization of a regulating system. - Notice that glucose by the value of glycemia plays the role of “informative molecule”. - Notice that in the hypothalamus there are glucose-sensitive neurons. When glycemia falls down, these neurons are capable, by nervous pathway, to trigger the discharge of adrenaline at the level of the adrenal medulla. 	

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		<ul style="list-style-type: none"> - Compare the role of the effector organs that correct the variations of glycemia: liver, muscles, and adipose tissue. - Know that the regulation of glycemia is the result of equilibrium between the action of the hypoglycemic hormone and those of the hyperglycemic hormones. - Specify that in regular conditions regulation is ensured by the antagonistic pancreatic hormones and that there is auto regulation by negative retrocontrol. - Notice that in the case of stress, the nervous system can interfere by acting on the adrenal medulla. - Draw a functional diagram on the regulation of glycemia 	

3 rd Year Secondary – Sociology and Economics Series			
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	<ul style="list-style-type: none"> - Recognize that social life involves inter-individual relations of diverse nature, and based on communication that may be expressed as aggressiveness, dominance and emotional reactions. - Understand that aggressiveness is a natural tendency to attack, which exists in the majority of species. - Take into account that aggressive behavior is linked to reality, innate disposition, and may result from frustration induced by an obstacle. - Point out that dominance is an individual tendency to control others behavior and establish and maintain a social structure based on a hierarchy. 		<p>2. Neurobiology, human behavior and health.</p> <p>2.1 Social communication</p> <p>-Aggressiveness</p> <p>-Dominance</p>

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-Emotional and stress reactions		<ul style="list-style-type: none"> - Recognize that an individual is permanently subject to disturbances of various origins called stress, which constitute aggression towards his own organism. - Point out that too many situations may underlie stress. - Notice that the organism reacts to stress by visible, immediate, involuntary and adapted responses. - Take into account that the organism's reaction towards stress is defense reactions which favor fight or flight. - Recognize that certain reactions towards stress concern the functioning of internal organs white others affect behavior. - Notice the existence of discreet responses in many situations of stress such as hormonal fluctuation. - Note that an organism reacts sometimes in an unfavorable manner when it is under intense stress. - Point out that regulatory and adapting reactions to stress involve intervention of sensory receptors, integrating nervous centers and effectors. - Notice that the nervous system and the hormonal one function together to face stress. - Point out that the hypothalamus plays and integrating role for the nervous and hormonal mechanisms. - A behavioral act, in response to aggression, involves both the nervous and endocrine system. - 	

		<ul style="list-style-type: none">- The elements which interfere in regulating and adapting reactions to stress which are sensory receptors (eyes, ears, skin sensory receptors, as well as the receptors for blood pressure), nervous centers in the brain and mainly in the limbic system (without going into details about the limbic system) and effector organs (facial muscles, blood vessels, glands, etc..)- The emotional response to transient stress like danger (fight or flight reaction) which is regulated by adrenaline secreted by the adrenal medulla gland. The latter is stimulated by nervous system (centers in the limbic system are involved).- Adrenaline favors the increase of the frequency of cardiac activity, the respiratory activity, and the increase of glucose concentration in blood and redistributes blood to muscles. All these consequences tend to provide muscles with sufficient glucose and oxygen gas so that muscle tissues undergo cellular oxidation to produce sufficient energy needed for flight reaction.	
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		<p>The emotional response to long term stress (suffering from chronic disease) which is regulated by Glucocorticoid hormones secreted by the adrenal cortex. The latter is stimulated by nerve centers in the limbic system. Glucocorticoid favors the increase in blood glucose level and lowers the excretion of water from the kidneys and has an anti-inflammatory effect that helps the organism in resisting aggression. If long term stress persists for long duration it results in decreasing the concentration of released glucocorticoids (exhaustion phase) which result in weak immunity and other health problems that might lead to death.</p>	

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4.2 Improvement of the species: Hybridization, selection genetic experimentation.		<ul style="list-style-type: none"> - Recognize the improvement of the species consists of assembling maximum favorable characteristics that have an economic interest. - Know that hybridization is crossing members belonging to different strains of the same species. - Know that the principle of selection consists of reproduction of the chosen individuals with the most desirable characteristics to raise a whole population of the new strain and thus improving the species. 	

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<p>4.3 Industrial breeding and agricultural research:</p> <p>Selection of productive breeds and research of new food sources.</p>		<ul style="list-style-type: none"> - Note that the techniques of species improvement are various: hybridization, selection and genetic manipulation. hybridization and selection Point out that industrial breeding is the production of a great quantity of animal which a good quality to meet the consumers demands, and to insure great profit to the breeder. - Cite the conditions of breeding. - Know that agricultural research aims at satisfying the needs which leads to production of animals and improving their products. - Note the animal nutrition is rationalized to limit the cost and avoid the animals obesity 	