

**Year 10 BIOLOGY IGCSE LONG TERM PLAN with CURRICULUM STANDARDS**

Year 10 BIO	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8
TERM 1	G10 /BIO 1 (8)		G10 /BIO 2a (8)		G10 /BIO 2b (12)			
	Variety of living organisms		Cell structure & stem cells		Biological molecules			
	Understand how living organisms share the following characteristics:nutrition, respiration ,excretion,homeostasis,response to stimuli,reproduction& growth.Describe the common features shown by eukaryotic organisms: plants, animals, fungi, protoctists & bacteria .Define the term pathogen and know that pathogens may include fungi, bacteria,protoctists or viruses. <b>Base line test - Unit 1: Plants &amp; their reproduction ,Unit 2 :Sexual reproduction in animals , Unit 3 - Organisms &amp; their environment ,Unit 4 - plants,Diseases,Control systems,Movement in &amp; out of cells &amp; Genetics- DNA</b>		Understand the levels of organisation in organisms: organelles, cells, tissues, organs and systems.Describe cell structures&the functions of various parts in plant & animal cell.explain the importance of cell differentiation in the development of specialised cells.Enlist the advantages and disadvantages of using stem cells in medicine. <b>Assessment 1</b>		Identify the chemical elements present in carbohydrates, proteins and lipids.Describe the structure of carbohydrates, proteins and lipids as large molecules made up from smaller basic units:starch and glycogen from simple sugars, protein from amino acids, and lipid(fats and oils) from fatty acids and glycerol. <b>Practical 1: Investigate food samples for the presence of glucose, starch, protein and fat.Understand the role of enzymes as biological catalysts in metabolic reactions&amp; factors affecting enzyme action.Practical 2 : investigate how enzyme activity can be affected by changes in pH.</b>			Revision for <b>2nd assessment</b> - stem cells and Biological molecules
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TERM 1	G10 /BIO 2c (8)		G10 /BIO 2e (16)					
	Transport of substances into and out of cells		Nutrition in Flowering plants		Nutrition in Humans			
	Understand the processes of diffusion, osmosis and active transport by which substances move into and out of cells.Explain how factors affect the rate of movement of substances into and out of cells, including the effects of surface area to volume ratio, distance, temperature and concentration gradient. <b>Practica 3: investigate diffusion and osmosis using living and non-living systems</b>		Describe the structure of the leaf and explain how it is adapted for photosynthesis.Understand the process of photosynthesis and its importance in the conversion of light energy to chemical energy.Explain how varying carbon dioxide concentration, light intensity and temperature affect the rate of photosynthesis.Role of mineral ions for plant growth. <b>Practical 4: investigate photosynthesis, showing the evolution of oxygen from a water plant, the production of starch and the requirements of light, carbon dioxide and chlorophyll. Assessment 3</b>		Identify the sources and describe the functions of carbohydrate, protein, lipid(fats and oils), vitamins A, C and D, the mineral ions calcium and iron, water and dietary fibre as components of the balanced diet.Understand how energy requirements vary with activity levels, age and pregnancy.Describe the structure and function of the human alimentary canal, including the mouth, oesophagus, stomach, small intestine (duodenum and ileum), large intestine (colon and rectum) and pancreas.Role of digestive enzymes, including the digestion of starch to glucose by amylase and maltase, the digestion of proteins to amino acids by proteases and the digestion of lipids to fatty acids and glycerol by lipases.Explain the role of liver in bile production & neutralising stomach acid and emulsifying lipids. <b>Practical 5:Investigate the energy content in a food sample</b>			Revision for <b>4 th assessment</b> - Nutrition in Humans . <b>Revision for first term</b>
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TERM 2	G10 /BIO 2f (4)	G10 /BIO 2g (12)		G10 /BIO 2h (12)				
	Cellular respiration	Gas exchange in living organisms		Transport in Flowering plants				
	Understand how the process of respiration produces ATP in living organisms. Compare aerobic and anaerobic respiration in plants and in animals. <b>Practical 6 : Investigate the evolution of carbon dioxide and heat from respiring seeds or other suitable living organisms .</b>	Understand how the structure of the leaf is adapted for gas exchange . Describe the role of stomata in gas exchange.Significance of compensation point in plants relating to the intensity of light. <b>Practical 7 : investigate the effect of light on net gas exchange from a leaf,using hydrogen-carbonate indicator.</b> Describe the structure & role of the thorax, including the ribs, intercostal muscles,diaphragm, trachea, bronchi, bronchioles, alveoli and pleural membranes in ventilation & gas exchange .Understand the biological consequences of smoking in relation to the lungs and the circulatory system, including coronary heart disease. <b>Practical 8: investigate breathing in humans, including the release of carbon dioxide and the effect of exercise. Assessment 5</b>		Understand the need for a transport system in multicellular organisms & interpret how SA / Vol. ratio affects rate of diffusion.Describe the role of phloem & xylem in transport in plants & mechanisms involved in transport and translocation of nutrients . Discuss the role of transpiration & factors affecting transpiration in plants . <b>Practical 9 : investigate the role of environmental factors in determining the rate of transpiration from a leafy shoot</b>			Revision for <b>6 th assessment</b> :Transport in Flowering plants	
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TERM 2	G10 /BIO 2h (12)		G10 /BIO 2i (12)					
	Transport in Humans		Excretion					
	Describe the composition & functions of the blood: red blood cells, white blood cells, platelets and plasma.Understand how the immune system responds to disease using white blood cells,illustrated by phagocytes ingesting pathogens and lymphocytes releasing antibodies specific to the pathogen.Discuss the role of vaccination.Identify the general structure of the circulation system, including the blood vessels to and from the heart and lungs, liver and kidneys Explain the detailed structure & function of heart & blood vessels .Discuss risk factors leading to CVD . <b>Assessment 7</b>		Understand the origin of carbon dioxide and oxygen as waste products of metabolism and their loss from the stomata of a leaf.Identify the excretory products of the lungs, kidneys and skin (organs of excretion).Describe the structure of the urinary system &nephron. Explain urine formation & negative feedback mechanism involved in urine formation .Significance of dialysis & kidney transplant .			Revision for <b>8 th assessment</b> : Excretion & <b>Revision for final exam</b>		