Curriculum Map Year 10 - Biology

Topic Name	Term	Content / skills developed with link to NC / exam board subject content (if applicable)	Reflection on previous learning	Progress to future learning	Global Citizenship links	Qatar National Identity links
Transport across membranes	**Term 1**	• **Understand and investigate the process of diffusion, osmosis and active transport.** • **Understand how different factors can affect the rate of movement.**	**Year 7 Cells, tissues, organs and systems** **Year 7 The particle model**	**Year 12 Membranes, proteins, DNA & gene expression** **Year 12 Cell structure, reproduction and development**	**PRIDE** **Prepare for future challenges** **Developing skills for the future**	**Conscious thinking** about my **Health**
Plant nutrition and transport	**Term 1**	• **Understand and investigate the process of photosynthesis including how the leaf is adapted for carrying out photosynthesis.** • **Understand how different factors can affect the rate of photosynthesis.** • **Understand the process of gas exchange and how the leaf is adapted to the process.** • **Investigate the effect of light on the net gas exchange using hydrogen-carbonate indicator.** • **Understand the process of transpiration and the adaptations involved in the process.**	**Year 9 Plant growth**	**Year 12 Plant structure & function, biodiversity and conservation**	**PRIDE** **Prepare for future challenges** **Developing skills for the future**	**Conscious thinking** about my **Health** **Conscious thinking** about my **Environment**

Human nutrition	**Term 1**	• **Understand the function of the different food groups within the context of a balanced diet including energy requirements for different individuals.** • **Describe the adaptations of the alimentary canal which allow for the movement and absorption of food.** • **Describe the role of digestive enzymes and bile in digestion.**	**Year 8 Food and nutrition**	**Year 12 Molecules, transport and health**	**PRIDE Prepare for future challenges Developing skills for the future**	**Conscious thinking** about my **Health** **Conscious thinking** about my **Actions**
Human transport	**Term 2**	• **Describe the structure & function of red bloods cells, white blood cells, platelets & plasma.** • **Describe how lymphocytes and phagocytes respond to infection and how vaccinations can reproduce this response.** • **Describe the structure and function of the heart and blood vessels.** • **Understand how factors may increase the risk of CHD.**	**Year 7 Muscles and bones**	**Year 12 Molecules, transport and health** **Year 13 Respiration, muscles and the internal environment**	**PRIDE PRIDE Prepare for future challenges Developing skills for the future**	**Conscious thinking** about my **Health**
Respiration & gas exchange	**Term 2**	• **Understand and investigate the various types of respiration in different types of organism.**	**Year 7 Muscles and bones** **Year 8 Breathing and respiration**	**Year 13 Respiration, muscles and the internal environment**	**PRIDE Prepare for future challenges**	**Conscious thinking** about my **Health**

		• **Describe the structure and function of the respiratory system.** • **Understand the role of the diaphragm and intercostal muscles in ventilation.** • **Explain how the alveoli are adapted for gas exchange.** • **Understand the biological consequences of smoking on the respiratory system.**			**Developing skills for the future**	
Excretion & kidneys	**Term 2**	• **Describe the structure of the urinary system including the kidneys, ureters, bladder and urethra.** • **Understand how the kidney carries out its role in excretion and state the substances that are excreted.** • **Describe the structure of a nephron, including the Bowman's capsule and glomerulus, convoluted tubules, loop of Henle and collecting duct.** • **Describe the process of ultrafiltration and selective reabsorption.** • **Understand how water is reabsorbed from the collecting duct and**	**Year 7 Cells, tissues, organs and systems** **Year 8 Food and nutrition**	**Year 13 Respiration, muscles and the internal environment**	**PRIDE** **Prepare for future challenges** **Developing skills for the future**	**Conscious thinking** about my **Health** **Conscious thinking** about my **Actions**

		explain how ADH controls this process.				
Coordination & control	**Term 3**	• **Recall the meaning of homeostasis and describe the role of the skin in temperature regulation.** • **Compare and contrast the hormonal and nervous communication control responses.** • **Recall the structure of the central nervous system and understand that it is responsible for coordinating responses to stimuli including the role of neurotransmitters in a synapse.** • **Describe the structure and functioning of a simple reflex arc illustrated by the withdrawal of a finger from a hot object.** • **Describe the structure and function of the eye as a receptor and understand how the eye focuses on near and distant objects and responds to changes in light intensity.** • **Understand that plants respond to stimuli and describe the geotropic and phototropic**	**Year 7 Cells, tissues, organs and systems**	**Year 13 Coordination, response and gene technology**	**PRIDE** **Prepare for future challenges** **Developing skills for the future**	**Conscious thinking** about my **Health** **Conscious thinking** about my **Actions**

		responses of roots and stems including the role of auxin.				
Inheritance	**Term 3**	• **Describe the structure of a DNA and an RNA molecule.** • **Describe the stages of protein synthesis including transcription and translation.** • **Understand how to draw test cross diagrams to calculate patterns of inheritance in dominant and recessive genetic diseases.** • **Describe how cells divide by the process of mitosis and meiosis.** • **Understand that variation between organisms can be caused by genetics or the environment.** • **Understand Darwin's theory of evolution through natural selection.**	**Year 7 Sexual reproduction in animals** **Year 9 Genetics and evolution**	**Year 12 Membranes, proteins, DNA & gene expression** **Year 12 Cell structure, reproduction and development**	**PRIDE** **Prepare for future challenges** **Developing skills for the future**	**Conscious thinking** about my **Future** **Conscious thinking** about my **Family**