



HUMAN BIOLOGY GENERAL UNIT 3 & 4 PROGRAM 2016

AN INDEPENDENT PUBLIC SCHOOL

WK	AREA	CURRICULUM	TEXT	ASSESSMENT
1.1	Unit 3	<p>Skeletal system</p> <ul style="list-style-type: none"> • the support and movement of the body is facilitated by the structure and function of the bones and joints in the skeletal system. <ul style="list-style-type: none"> ○ The skeleton as the structural framework of the body (axial and appendicular) ○ Orientation (posterior, anterior, superior, inferior, distal, proximal, ○ Major bones and their functions (long, short, irregular and flat bones, examples of each) 	3AB Ch. 13 1AB Ch. 12	
1.2	Unit 3	<ul style="list-style-type: none"> • the structure and development of long bones provide for strength, growth and repair <ul style="list-style-type: none"> ○ long bone structure- macroscopic and microscopic (osteons) ○ ossification/formation of bone ○ Cartilage (in synovial joints, occurs between bones) 	3AB Ch. 13	Task 1: Bone Density and Osteoporosis
1.3	Unit 3	<ul style="list-style-type: none"> • the support and movement of the body is facilitated by the structure and function of the joints in the skeletal system <ul style="list-style-type: none"> ○ Types of joints and the range of movement they permit, including immovable, cartilaginous, hinge, pivot, gliding and ball and sockets ○ General structure of synovial joints ○ Location of different joints in the human body 	1AB Ch. 12	
1.4	Unit 3	<ul style="list-style-type: none"> • skeletal damage caused by many sporting injuries are due to movements beyond the capabilities of the bones and joints, and treatment can be by basic first aid and medication, or radical surgery <ul style="list-style-type: none"> ○ conditions of aging: arthritis, osteoporosis ○ sporting injuries: dislocations, fractures, sprains ○ Treatment of damage to joints and bones depends on the severity of the injury ○ Range and examples of treatments from simple first aid and medication to surgery 	1AB Ch.11 & 12	Task 2: Sporting Injuries

1.5	Unit 3	<p>Muscular system</p> <ul style="list-style-type: none"> • locomotion and balance is facilitated by the structure and actions of the skeletal muscles <ul style="list-style-type: none"> ○ muscle types characteristics and function (smooth, skeletal, cardiac muscles) • skeletal muscles work in groups around joints to bring about the desired action, while maintaining stability of the joint and providing strength to the action <ul style="list-style-type: none"> ○ Movement about a joint as a result of the contraction of paired muscles attached to articulated bones by tendons and supported by ligaments. ○ antagonists and agonists, synergist muscles 	3AB Ch.14 1AB Ch.11	Task 3: Skeletal System Test
1.6	Unit 3	<ul style="list-style-type: none"> • the structure of muscles allow for small movements at cellular level to combine to produce large, strong movements used in walking, balance and arm movements <ul style="list-style-type: none"> ○ structure of skeletal muscle (macroscopic to microscopic) ○ sliding filament model basic (actin, myosin, sarcomere) ○ control of skeletal muscle (nervous system stimulus- calcium-contraction of sarcomere) 	3AB Ch.14	Task 4: Muscle Endurance (STAWA Bk 1 Act.16)
1.7	Unit 3	<ul style="list-style-type: none"> • dysfunctions of the muscular systems can be debilitating to affected individuals, and ongoing research needs to occur to discover causes and/or improved treatment <ul style="list-style-type: none"> ○ muscle strains link to inflammation, how to treat (RICE) ○ Muscle loss/tone-Physiotherapy ○ genetic: muscular dystrophy 		
1.8	Unit 3	<p>Nervous system</p> <ul style="list-style-type: none"> • The nervous system enables us to respond to external changes. Information from receptors passes along nerves to the brain where the brain coordinates the response <ul style="list-style-type: none"> ○ General nerve structure and function (functional and structural types) ○ Basic Impulse along axon (electrical) and across a synapse (chemical/neurotransmitter). ○ Divisions of the nervous system – peripheral and central ○ Structures and functions of the brain: cerebellum, cerebrum, brainstem and spinal cord ○ Protection of the central nervous system by bone, meninges and cerebrospinal fluid 	1AB Ch 8 3AB Ch.	Task 5: Muscular System Test

1.9	Unit 3	<ul style="list-style-type: none"> • Receptors detect stimuli which include light, sound, changes in position, chemicals, touch, pressure, pain and temperature <ul style="list-style-type: none"> ○ Receptor types, functions and locations. (photoreceptors, chemoreceptors. Stretch receptors, pain receptors, thermoreceptors) • the structure of the eye, ear and receptors in the skin allow the body to react to changes in the external environment <ul style="list-style-type: none"> ○ parts and functions of the eye ○ how the lens focuses light on photoreceptors ○ conversion of message to electrical, then journey to occipital lobe (visual cortex) ○ parts and function of the ear ○ conversion of soundwave to electrical, then journey to temporal lobe (auditory processing area) ○ parts and function of the skin ○ control of body temperature 	1AB Ch. 8 and 9	
1.10		<ul style="list-style-type: none"> • reflex actions are automatic and rapid, which involve sensory neurons, interneurons and motor neurons <ul style="list-style-type: none"> ○ Components of a reflex arc ○ Purpose of a reflex ○ Examples of common reflexes • the nervous system and the musculoskeletal system interact to provide coordinated actions of the body for walking and balance <ul style="list-style-type: none"> ○ control of movement (cerebrum-cerebellum-effector) 	1AB Ch.8 3AB Ch.7	Task 6: Sight Testing (STAWA Bk 1 Act.36)
2.1	Unit 3	<ul style="list-style-type: none"> • dysfunctions of the nervous can be debilitating to affected individuals, and ongoing research needs to occur to discover causes and/or improved treatment <ul style="list-style-type: none"> ○ spinal cord injury ○ meningitis ○ cerebral palsy ○ Huntington's disease ○ Alzheimer's ○ Neurotoxins (box jellyfish, blue ringed octopus, snakes etc), alcohol, anaesthetics • increased understanding of the central nervous system and muscle coordination have led to innovations in the treatment of injuries <ul style="list-style-type: none"> ○ cell replacement therapy ○ gene therapy 	1AB Ch.8 3AB Ch.23	Task 7: Nervous System Dysfunction

2.2	Unit 3	<p>Endocrine system</p> <ul style="list-style-type: none"> • many processes within the body are coordinated by hormones, which are secreted by glands and are transported to their target organs in the blood <ul style="list-style-type: none"> ○ hormone action ○ compare and contrast endocrine with nervous system • the endocrine glands of the body include hypothalamus, pituitary, adrenal gland, pancreas, thyroid, pineal and parathyroid glands, testes, ovaries and placenta <ul style="list-style-type: none"> ○ identify gland in body ○ link gland to hormones produced and their functions 	3AB Ch.4	Task 8: Nervous System Test
2.3	Unit 3	<ul style="list-style-type: none"> • hormone action can be via negative feedback to maintain internal conditions within tolerance limits; receptor, modulator, effector, response and feedback, are components of a feedback loop <ul style="list-style-type: none"> ○ positive and negative feedback ○ components of a feedback loop ○ to maintain homeostasis ○ examples of feedback loops controlled by hormones <ul style="list-style-type: none"> ▪ sugar ▪ water ▪ carbon dioxide levels 	3AB Ch.9 and 10	
2.4	Unit 3	<ul style="list-style-type: none"> • thyroxine, cortisol, growth hormone and, to a lesser extent, adrenaline, all play a role in the regulation of metabolism <ul style="list-style-type: none"> ○ The metabolic effects and negative feedback loops for cortisol, growth hormone and adrenaline 	3AB Ch. 4 and 9	Externally Set Task
2.5	Unit 3	<ul style="list-style-type: none"> • Endocrine dysfunction <ul style="list-style-type: none"> ○ Diabetes, thyroid dysfunction etc • hormone replacement therapies can be used for the treatment of endocrine disorders to help improve the quality of life of affected individuals 	3AB Ch. 11	Task 9: Treatment of Endocrine Dysfunction (Diabetes and Thyroidism)
2.6	EXAMS/WORKPLACE LEARNING			
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2.8	Unit 4	<ul style="list-style-type: none"> • the development of the microscope was important <ul style="list-style-type: none"> ○ linking specific pathogens to specific diseases ○ allowed for the appropriate treatment or prevention 		Task 10: Endocrine System Test
2.9	Unit 4	<p>Immune System</p> <ul style="list-style-type: none"> • infectious disease is caused by invasion of a pathogen, and can be transmitted from one host to another • pathogens include bacteria, viruses, fungi, parasites, and are the causes of common diseases, including Ross River disease, influenza, food poisoning, tinea and malaria 	1AB Ch.14 2AB Ch. 9	
2.10	Unit 4	<ul style="list-style-type: none"> • the transmission and spread of infectious disease is facilitated by local, regional and global movement of individuals • pathogens have adaptations that facilitate their entry into the body and transmission between hosts • transmission occurs by various mechanisms, including through: <ul style="list-style-type: none"> ○ direct and indirect contact ○ Body fluid ○ By droplets ○ Ingestion ○ contaminated food and water ○ disease-specific vectors, including airborne transmission 		
3.1	Unit 4	<ul style="list-style-type: none"> • Body defences <ul style="list-style-type: none"> ○ 3 lines of defence- non-specific defence ○ External defences <ul style="list-style-type: none"> ▪ mucous membranes, hairs, acids, cerumen (ear wax) ○ Protective reflexes <ul style="list-style-type: none"> ▪ Sneezing, coughing, vomiting, diarrhoea ○ Internal defences <ul style="list-style-type: none"> ▪ phagocytes and inflammatory response 	1AB Ch.14 2AB Ch. 9	Task 11: Hygiene and Hand washing Techniques (Set Up)
3.2	Unit 4	<ul style="list-style-type: none"> • Specific defence <ul style="list-style-type: none"> ○ Response to specific antigens is due to B-cells and T-cells, cell type, location, function. ○ Activation of B-cells and T-cells, process to form memory cells. <ul style="list-style-type: none"> ▪ Importance of memory cells for secondary infections. ○ Cell-mediated response <ul style="list-style-type: none"> ▪ T-cells: role of T-cells- attach and destroy antigen ○ Antibody mediated response <ul style="list-style-type: none"> ▪ B-cells: create antibodies, role of antibodies. 	3AB Ch.12	Task 12: Pathogens and Body Defence Test
3.3	Unit 4	<ul style="list-style-type: none"> • Developing Immunity through memory cells <ul style="list-style-type: none"> ○ First infection takes longer to overcome response slow and symptoms felt. ○ Secondary infection quicker response symptoms usually reduced or non-existent • Types of Immunity- natural, artificial, passive and active include examples. • Increase in allergy disorders, especially in children • Possible causes of the increase The 'hygiene hypothesis' 	3AB Ch. 12	Task 13: Vaccines and Immunity

3.4	Unit 4	<p>Prevention of Disease</p> <ul style="list-style-type: none"> • Offers no Immunity but reduces rate of infection to help body overcome the infection. • modern medicines which assist in reducing the rate of infection, or the severity of the infection, include antiseptics, antivirals and antibiotics • use and misuse of medicinal treatments against pathogens can cause the development of multi-resistant bacteria that increase risks associated with the infection 		
3.5	Unit 4	<ul style="list-style-type: none"> • preventing the transmission of disease includes strategies of quarantine, immunisation and disruption of pathogen life cycle <ul style="list-style-type: none"> ○ hygiene practices by individuals in work places, especially in places of food preparation and in hospitals, affect the transmission of disease 		
3.6	Unit 4	<ul style="list-style-type: none"> • Global variations in hygiene standards <ul style="list-style-type: none"> ○ standards of hygiene, including sanitation of water, waste treatment and the presence of pathogens and disease vectors, ○ travel warnings provide information to help reduce risk of infection • Australia's hygiene practices and standards 		Task 11: Hygiene and Hand washing techniques (Due)
3.7	Unit 4	<ul style="list-style-type: none"> • International response to pandemics such as SARS and bird flu • Methods of reducing foreign diseases on isolated populations 		
3.8	Unit 4	<ul style="list-style-type: none"> • Impact of population density on disease transmission • Human movement and its influence on disease transmission • Impact of disease by human movement differs between communities • Isolated communities show greater effects of this impact 		
3.9	Unit 4	<ul style="list-style-type: none"> • General names of sexually transmitted infections • Impact of social behaviour on the transmission, spread and persistence of sexually transmitted infections 		Task 14: Immunity and Prevention Test
3.10	Unit 4	REVISION/ CATCH UP/ EVOLUTION		
4.1	Unit 4	REVISION/ CATCH UP/ EVOLUTION		
4.2	Unit 4	REVISION/ CATCH UP/ EVOLUTION		

1AB- Human Perspectives 1AB : An Introduction

2AB- Human Perspectives 2AB 6th Edition

3AB- Human Perspectives 3AB 6th Edition