

ST MAARTEN ACADEMY

DEPARTMENT OF SCIENCE

HUMAN AND SOCIAL BIOLOGY YEAR PLAN

CHRISTMAS TERM

5TH FORM

WEEKS	TOPIC	OBJECTIVES	ACTIVITIES	ASSESSMENTS
1 - 2	<p><u>LIFE PROCESSES.</u> <u>THE CIRCULATORY SYSTEM</u></p> <ul style="list-style-type: none">-transport system in the human body-materials which need to be transported around the human body;-structures of the human heart to their functions;-structure and function of the heart;-the concept of blood pressure;-structure and function of the circulatory system in humans;-components of the blood to its function;-structures of the arteries, veins and capillaries to their functions;-structures of the red blood cells,	<ul style="list-style-type: none">-explain the need for a transport system in the human body;-identify the materials which need to be transported around the human body;-relate the structures of the heart to their functions;-describe the structure and function of the heart;-explain the concept of blood pressure,-describe the structure and function of the circulatory system in humans;-relate the components of the blood to its function ;	<p>Drawing and labeling the structure of the human heart.</p> <p>Drawing the arteries, veins and capillaries.</p>	<p>Quiz In class test</p>

	<p>phagocytes and lymphocytes to their functions; -the process and the importance of blood clotting.</p> <p>-causes and effects of heart attacks -include hypertension (high blood pressure) atherosclerosis, coronary thrombosis, artificial pacemaker. Interpretation of data. -tables, charts and graphs to represent data on the circulatory system; -structure and function of the lymphatic system; -role of the tissue fluid and lymph; location and</p>	<p>-relate the structures of the arteries, vein and capillaries to their functions; -relate the structures of the red blood cells, phagocytes and lymphocytes to their functions; -explain the process and the importance of blood clotting; -explain the causes and effects of heart attacks; -use tables, charts and graphs to represent data on the circulatory system; -describe the structure and function of the lymphatic system; -describe how tissue fluid and lymph are formed.</p>	<p>-testing blood pressure.</p> <p>Revision for end of term exams.</p>	
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<p>3 – 5</p>	<p>function of lymph nodes. -how tissue fluid and lymph are formed. -diagram is required</p> <p><u>SKELETAL SYSTEM</u> -Identify the major bones of the skeleton; -Relate the structure of the skeleton to its functions; -Relate the structure of a typical bone to its function; -distinguish between bone and cartilage; -explain the importance of cartilage; -distinguish between tendons and ligaments; -identify a hinge joint, fixed joint, and ball and socket joint; -describe movement in the hinge joint, and ball and socket joint; -identify the biceps and triceps of the upper arm; -explain how skeletal muscles function in the movement of a</p>	<p>-Cranium, clavicle, scapula, vertebral column, humerus, radius, ulna, rib cage, sternum, pelvic girdle, femur, tibia, fibula. -Movement, protection, support, breathing, production of blood cells. -Comparison of characteristics of bone and cartilage. -Comparison of characteristics and functions of tendons and ligaments. -Definition of the term joint; location of joints. -Points of origin (location and definition); points of insertion (location and definition) - the role of antagonistic muscles in the movement of limbs; effect of</p>	<p>-Drawing of long bone (internal view)</p> <p>Drawing of the hinge joint, fixed joint and ball and socket joint.</p> <p>Drawing of the biceps and triceps points of origin.</p>	<p>Quizz, test.</p>
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<p>6 - 8</p>	<p>limb; -explain the importance of locomotion to man; -evaluate the factors which adversely affect the skeletal system.</p> <p><u>EXCRETION AND HOMEOSTASIS</u> -explain the importance of excretion in human beings; -explain the roles of the organs involved in excretion; -relate the structures of the kidney to their function; -relate the structure of the skin to their functions; -explain the concept of homeostasis; -explain the concept of feedback mechanisms; -describe the regulation of blood sugar; -explain the regulation of water; -distinguish between heat and temperature; -describe the regulation of temperature.</p>	<p>exercise- muscle tone.</p> <p>-Include posture and poor foot-wear.</p> <p>-include definition of excretion</p> <p>-lungs, skin and kidney; examples of metabolic wastes. -internal structure of the kidney, structure and function of the nephron; selective reabsorption of substances; composition of urine; mention renal dialysis. -definition of homeostasis. -include regulation of carbon dioxide (CO₂).</p> <p>-role of insulin and glucagon.</p>	<p>-drawing showing the internal structure of the kidney.</p> <p>-drawing showing the structure of the skin.</p>	<p>Quizz Test</p>
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<p>9-11</p>	<p><u>COORDINATION AND CONTROL</u> -Central nervous system- brain and the spinal cord. -peripheral nervous system: spinal nerves and cranial nerves, and autonomic nervous system</p> <p>-cerebrum, cerebellum, medulla oblongata, hypothalamus, pituitary glands.</p> <p>Definition of the neurone and nerve</p> <p>-properties of neurons; irritability; conductivity; structures of neurons, cell bodies, axons and dendrites</p> <p><u>Functions and types of nerves:</u> Motor, sensory, mixed. Synapse and chemical transmitters.</p>	<p>-Describe the main divisions of the nervous system</p> <p>-describe the functions of the parts of the brain</p> <p>-distinguish between a neurone and a nerve.</p> <p>-Explain the function of the motor and sensory neurons and spinal synapses;</p>	<p>Draw and label neurones.</p>	<p>Quiz In class tests</p>
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	<p>Definition; structure of spinal cord ; The spinal reflex action(eg knee jerk reflex) reaction to painful stimuli</p> <p>Definition; transmission of nerve impulses; involvement of neurons in the brain , spinal cord and effector muscles.</p> <p>Names of sense organs; stimuli to which they respond</p> <p>Long and short-sightedness Astigmatism, Diseases eg; glaucoma and cataracts.</p>	<p>- describe the mechanisms of a reflex action;</p> <p>-explain the process by which voluntary actions occur;</p> <p>-distinguish between a voluntary and involuntary action; -Explain the response of the sense organs to stimuli;</p> <p>- relate the internal structure of the eye to their functions; -explain how images are form in the eye; -Explain accommodation in the eye; -describe the causes of, and corrective measures for eye defects; -Distinguish between endocrine</p>	<p>Draw a structure of the spinal cord.</p> <p>Demonstration of the knee jerk reflex</p> <p>Draw and label the internal section of the human eye.</p> <p>Draw and label the images formed in the eye.</p> <p>Draw and label diagram showing long and short sightedness</p>	
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	<p>-pituitary- anti-diuretic hormone (ADH), follicle stimulating hormone (FSH), Luteinising hormone (LH), growth hormones; Thyroid- thyroxine Pancreas-insulin, glucagon; adrenal-adrenaline Ovary-oestrogen, Progesterone; testes – testosterone.</p>	<p>(hormonal) and nervous control systems; -identify the sites of hormone production; -Explain the roles of selected hormones in the human body.</p>	<p>Draw and label the sites of hormone production.</p>	<p>Quiz In class test</p>
12-13	<p><u>REPRODUCTIVE SYSTEM</u> – -Include the structures of the gametes, diagram of systems required; related disorders such as ovarian, cervical and prostate cancers. -role of hormones: follicle stimulating hormone (FSH),</p>	<p>distinguish between sexual and asexual reproduction; -describe the structure and function of the reproductive systems in human beings; -describe the menstrual cycle; -explain ovulation, fertilisation, implantation and</p>	<p>Drawing and labeling the male and female reproductive organs (human)</p>	<p>Test Quiz</p>

<p>14</p>	<p>lutensising hormone (LH), oestrogen, progesterone. - role of placenta, umbilical cord and Amniotic sac; minute details of stages of development are not required. -importance of ante-natal and post-natal care including the advantages of breastfeeding. -natural, barrier, hormonal and surgical. -the use of condoms to prevent STIs. -spontaneous abortion (miscarriage); reasons for; advantages and disadvantages of abortion. - social and economic implications.</p> <p><u>HEREDITY AND VARIATION.</u> -definition of mitosis; movement of chromosomes during mitosis (names of stages not required) -production of identical daughter cells having the same number (diploid) and type</p>	<p>development of the embryo; -describe the birth process; -outline the importance of prenatal care; -explain how birth control methods prevent pregnancy; -explain the advantages and disadvantages of birth control methods; -discuss the issues related to abortion; -explain the importance of family planning; -use tables, charts and diagrams to represent data.</p> <p>-describe the process of mitosis;</p> <p>-explain the importance of mitosis;</p>	<p>Use of diagram for illustrate</p> <p>Diagram of foetus in uterus required.</p>	
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	<p>of chromosomes as the parent cell (clones); growth, repair and asexual reproduction.</p> <p>-definition of meiosis; movement and separation of homologous chromosomes and the subsequent separation of chromatids (names of stages not required)</p> <p>-importance of halving the chromosome number (haploid) in the formation of gametes; importance of meiosis in introducing variation into gametes.</p> <p>-examples of variation – height, weight, gender (sex), blood type, tongue rolling; mention antibiotic resistant bacteria.</p> <p>-include the difference between continuous and discontinuous variation; mutation, (down's syndrome, albinism).</p> <p>-a) DNA/RNA, chromosome , allele, dominant, recessive,</p>	<p>-describe the process of meiosis;</p> <p>-explain the importance of meiosis;</p> <p>-explain why genetic variation is important to living organisms;</p> <p>-distinguish between genetic variation and environmental variation;</p> <p>-explain the inheritance of a single pair of characteristics (monohybrid inheritance);</p> <p>-describe the inheritance of sex in human beings;</p> <p>-explain the concept of genetic engineering;</p>	<p>Drawing and labeling the stages of mitosis.</p> <p>Drawing and labeling the stages of meiosis.</p> <p>-</p> <p>Practical using height to show examples of variation</p>	<p>Quiz In class tests</p>
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15	<p>homozygous, heterozygous, gene, genotype and phenotype.</p> <p>-b) monohybrid inheritance to include: albinism, sickle cell anaemia, tongue rolling; sex linkage (haemophilia, colour blindness)</p> <p>-role of sex chromosomes.</p> <p>-changing the traits of one organism by inserting genetic material from another organism.</p> <p>-include recombinant DNA in the manufacture of insulin; its application in the production of food and medicine.</p>	<p>-discuss the advantages and the disadvantages of genetic engineering;</p> <p>-use tables, charts and graphs to represent data on heredity and variation.</p>		
	END OF	TERM		