

**ST MAARTEN ACADEMY**

**DEPARTMENT OF SCIENCE**

**HUMAN AND SOCIAL BIOLOGY YEAR PLAN**

**CHRISTMAS TERM**

**5<sup>TH</sup> FORM**

**2020/2021**

**Richard Fosbery, Peter Givens, Pamela Hunte, Mark Morris, Angela**

**Ramjit-Delochan HUMAN AND SOCIAL BIOLOGY FOR CSEC**

**2<sup>nd</sup> Edition**

**WEEKS                      TOPIC                      OBJECTIVES                      ACTIVITIES                      ASSESSMENTS**

1 - 2	<u>LIFE PROCESSES.</u> <u>THE CIRCULATORY SYSTEM</u> -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	-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	Drawing and labeling the structure of the human heart.  Drawing the arteries, veins and capillaries.	Quiz In class test
-------	--	---	--	-----------------------

	<p>the blood to its function;          -structures of the arteries, veins and capillaries to their functions;          -structures of the red blood cells, 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</p>	<p>structure and function of the circulatory system in humans;          -relate the components of the blood to its function ;          -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>	
--	---	---	--	--

<p>3 – 5</p>	<p>system;          -structure and function of the lymphatic system;          -role of the tissue fluid and lymph;          location and 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;</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</p>	<p>-Drawing of long bone ( internal view)</p> <p>Drawing of the hinge joint, fixed joint and ball and socket joint.</p>	<p>Quizz, test.</p>
--------------	--	---	---	---------------------

<p>6 - 8</p>	<p>-identify the biceps and triceps of the upper arm;          -explain how skeletal muscles function in the movement of a limb;          -explain the importance of locomotion to man;          -evaluate the factors which adversely affect the skeletal system.</p> <p><u>EXCRETION AND HOMEOSTASIS</u></p> <p>-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</p>	<p>of insertion (location and definition)          - the role of antagonistic muscles in the movement of limbs; effect of 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 (CO<sub>2</sub>).</p> <p>-role of insulin and glucagon.</p>	<p>Drawing of the biceps and triceps points of origin.</p> <p>-drawing showing the internal structure of the kidney.</p> <p>-drawing showing the structure of the skin.</p>	<p>Quiz Test</p>
--------------	--	---	---	------------------

<p>9-11</p>	<p>water; -distinguish between heat and temperature; -describe the regulation of temperature.</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>-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</p>	<p>Draw and label neurones.</p>	<p>Quiz In class tests</p>
-------------	--	---	---------------------------------	--------------------------------

	<p><u>Functions and types of nerves:</u> Motor, sensory, mixed. Synapse and chemical transmitters.</p> <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>function of the motor and sensory neurons and spinal synapses;</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;</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>	
--	---	--	---	--

12-13	<p>Long and short-sightedness Astigmatism, Diseases eg; glaucoma and cataracts.</p> <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><u>REPRODUCTIVE SYSTEM</u> – -Include the structures of the gametes, diagram of systems required; related</p>	<p>-describe the causes of, and corrective measures for eye defects; -Distinguish between endocrine (hormonal) and nervous control systems; -identify the sites of hormone production; -Explain the roles of selected hormones in the human body.</p> <p>distinguish between sexual and asexual reproduction; -describe the structure and function of the</p>	<p>Draw and label diagram showing long and short sightedness</p> <p>Draw and label the sites of hormone production.</p>	<p>Quiz In class test</p>
-------	---	---	---	-------------------------------

<p>14</p>	<p>disorders such as ovarian, cervical and prostate cancers.          -role of hormones: follicle stimulating hormone (FSH), lutenising 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</p>	<p>reproductive systems in human beings;          -describe the menstrual cycle;          -explain ovulation, fertilisation, implantation and 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>Drawing and labeling the male and female reproductive organs (human)</p> <p>Use of diagram for illustrate</p> <p>Diagram of foetus in uterus required.</p>	<p>Test Quiz</p>
-----------	---	--	---	------------------

	<p>(names of stages not required)</p> <ul style="list-style-type: none"> <li>-production of identical daughter cells having the same number (diploid) and type of chromosomes as the parent cell (clones); growth, repair and asexual reproduction.</li> <li>-definition of meiosis; movement and separation of homologous chromosomes and the subsequent separation of chromatids (names of stages not required)</li> <li>-importance of halving the chromosome number (haploid) in the formation of gametes; importance of meiosis in introducing variation into gametes.</li> <li>-examples of variation – height, weight, gender (sex), blood type, tongue rolling; mention antibiotic resistant bacteria.</li> <li>-include the difference between continuous and discontinuous variation;</li> </ul>	<ul style="list-style-type: none"> <li>-explain the importance of mitosis;</li> <li>-describe the process of meiosis;</li> <li>-explain the importance of meiosis;</li> <li>-explain why genetic variation is important to living organisms;</li> <li>-distinguish between genetic variation and environmental variation;</li> <li>-explain the inheritance of a single pair of characteristics (monohybrid inheritance);</li> <li>-describe the inheritance of sex in human beings;</li> </ul>	<p>Drawing and labeling the stages of mitosis.</p> <p>Drawing and labeling the stages of meiosis.</p> <p>-</p> <p>Practical using</p>	<p>Quiz</p> <p>In class tests</p>
--	--	---	---	-----------------------------------

15	<p>mutation, (down's syndrome, albinism).  -a) DNA/RNA, chromosome , allele, dominant, recessive, homozygous, heterozygous, gene, genotype and phenotype.  -b) monohybrid inheritance to include: albinism, sickle cell anaemia, tongue rolling; sex linkage (haemophilia, colour blindness)  -role of sex chromosomes.  -changing the traits of one organism by inserting genetic material from another organism.  -include recombinant DNA in the manufacture of insulin; its application in the production of food and medicine.</p> <p>END OF</p>	<p>-explain the concept of genetic engineering;</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> <p>TERM</p>	height to show examples of variation	
----	---	---	--------------------------------------	--