r

San Pedro High School
San Pedro Town
Belize District
Telefax: 226-2045
Email Address: esantizo@sphs.edu.bz

4th Form
BIOLOGY
YEARLY CURRICULUM

Text: Bradfield (2016)
BIOLOGY FOR CXC
Credit Hours: 5
Teacher: Mr. Erick Santizo
Contact No.: 605-0963

Course Description

Biology is very important and relevant; it deals with the study of living organisms. The knowledge and understanding of oneself and other organisms will undoubtedly improve the life of the individual as a whole.

During fourth form, the main focus of Biology will be to orient the students towards CXC Examinations as they build on the foundation they obtained in third form. The materials to be presented will be so as to eventually prepare the students for CXC, however, such will normally be presented at apace that allows the students to comprehend the information.

It is expected that students will participate in all laboratory exercise and make sure that all assignments are done and passed in on time. Students are strongly encouraged to pay keen attention to their laboratory exercises since the grading criteria to be used will be as recommended by CXC.

Grading Scheme	1st, Semester
Tests	30%
Quizzes	20%
Labs	15%
Assignments/ Forums	10%
Presentation	20%
Participation	5%
Total	100%

Grading Scheme	2nd Semester
Tests	25%
Quizzes	15%
Labs	10%
Presentation	15%
Assignments/Forums	10%
Exam	25%
Total	100%

SEMESTER 1, 2019 4th Form Biology

Date	Topic	Objectives Students should be able to:	Assessments
Week 1 Aug 26th – 30 Week 2 Sept 2 – 6th	**Transport in Mammals** **Blood, the living fluid **More about blood **How does blood move around the body **Tissue fluid and lymph	*Understand why small organisms do not need a transport system, but large organisms do. *Explain the need for transport systems in multi-cellular organisms. *Identify the types of materials which need to be transported in animals and plants. *Describe the structure and function of the circulatory system in humans. *Describe the structure and function of the heart. *Explain how the structures of the three types of blood vessels are suited to their function. *List and Describe the composition and functions of blood in transport. *Describe the functions of the main components of blood. *Explain how immunization is used to control disease.	Practical lab on Mammalian heart Quiz#1 Test#1
Week 3 Sept 9th – 13th Week 4 Sept 16th – 20	**Transport in plants** **Uptake and transport in plants **How do plants support themselves	*Describe the structure of xylem vessels, sieve tubes and companion cells. *Explain how the structure of xylem vessels suits them for their function. *Describe the process involved in transpiration. *Demonstrate the effects of external factors on transpiration. *State the function of phloem in the transport system of plants. *Discuss adaptations of plants to conserve water.	Lab#12 on white flowers ORR
Week 5 Sept 23 – 27 Week 6 Sept 30 – Oct 4th	→**Food storage**	* Identify the products stored in plants and animals and the sites of storage * Discuss the importance of food storage in living organisms	Lab#13on fruits/ Drawing
Week 7 Oct 7th – 11th Week 8 Oct 14th – 18th	**HOMEOSTASIS AND EXCRETION** **The liver **How do we get rid of waste substances	*Discuss the meaning of homeostasis and the concept of negative feedback *Discuss the importance of excretion in living organisms. *Give examples of substances excreted by animals and plants *State the means by which excretory products are eliminated from plants and animals. *Relate the structure of the kidney ton its osmoregulation and excretory function. *Explain the role of antidiuretic hormone (ADH) in osmoregulation. *Understand how dialysis can be used in the event of kidney failure.	Lab#14 on Urine Excretion

Week 8 Oct 21 – 25th Week 9 Oct 28- Nov 1 Week 10 Nov 4-8	**Sensitivity and coordination in living organisms** ****stimulus** ****Reflex arc** **The Brain** ****Responses to factors** *** Describe response of:** **a) green plants to stimuli** **b) invertebrates to variations in light intensity temperature and moisture** *** Define receptor and effector** **** endocrine system**	*Understand the meaning of the terms stimulus and response * explain why response to stimuli is importance for the survival of organisms *Define the terms receptor and effector *Explain the relationship between the receptor, the central nervous system and the effector. *Use simple flow diagrams to show the pathway along which an impulse travels in a reflex arc. *describe the function of the main regions of the brain. *Discuss the physiological, social and economic effects of drug abuse. * The response of stems and roots of seedlings to light, touch and gravity. Relate observations of plants in natural situations. * role of auxins not required. *Describe the responses of invertebrates to variations in light intensity, temperature and humidity, and how these responses can be investigated in a choice chamber. (earthworms, millipedes, woodlice) * sense organs, muscle and glands. Leaf, petiole apical meristem. *Understand the nature of the human endocrine system. *Describe the role of hormones from the adrenal glands and pancreas *Describe the responses of plant stems and roots to light, touch and gravity.	Lab#15 on MM on response and time Quiz Model of the brain TEST #1 2nd Sem Feb 1st, 2019. - Carry out controlled investigations make observations to the behavior of plants in natural siutations. - construct simple choice chambers record observations. - Reaction to hot objects, insect bites.
Week 11 Nov 11th – 15 Week 12 Nov 18 – 22	**Support and Movement** ● Introducing the skeleton ● How do we move ● Aches, pains and broken bones ● How do other organisms move **→ Growth in plants** ** Germination	*Understand the difference between movement and locomotion *Discuss the importance of locomotion in animals. * Relate the structure of the human skeleton to its function. *Describe the structure and function of a movable joint. *Understand the structure and functions of different types of joints. ⏭Relate the structure of the skeleton to its functions in humans. ⏭Distinguish between cervical, thoracic and lumbar vertebrae. ⏭Describe the mechanism of movement in a human. *Describe the mechanisms of movement in the human arm. ⏭Draw, label and annotate a simple diagram of the long bones of a fore or hind limb. *Understand the different ways in which growth can be measured *Measure growth in a plants.	Lab on Germination: A/I Graphs Tables Lab#16 on Muscle Model of the skeleton (suggestion for 2020 let students create a model of the human arm)

		* Make deductions from simple investigations designed to demonstrate growth in living organisms * Demonstrate the process of etiolation in germinating seedlings as an unhealthy growth in plants. *Describe the structure of a dicotyledonous seed. *Describe the processes taking place within a seed during germination.	
Week 13 Nov 18th – 22 Week 14 Nov 25 -29	**Reproduction in animals** ⏩The menstrual cycle ⏩Human reproductive system ⏩Pregnancy and birth ⏩Family Planning **Sexually transmitted diseases	*Understand the difference between sexual and asexual reproduction *Describe the structure and function of the reproductive system in humans. *Understand the stages of sexual reproduction in humans: -Production of sex cells -Transfer of the male sex cell to the female sex cell -fertilization -development of the embryo *Describe the functions of the placenta during pregnancy *Describe the stages of birth *Describe the menstrual cycle and its control by hormones *Discuss the advantages and disadvantages of different methods of birth control *Discuss the transmission and control of sexually transmitted infections.	Lab#17 on Sex determination Presentation on sexually transmitted diseases
Week 15 Dec 2 – 6 Week 16 Dec 9-13	**Reproduction in plants** Seed and germination * assign students over vacation to do a lab on seed germination and see results and create a graph.	*Relate the parts of a flower to their function *Compare the structure of an insect pollinated flower with that of a wind-pollinated flower *Understand the difference between cross-pollination and self-pollination. *Distinguish between the processes of pollination and fertilization. *Explain how the processes of fruit and seed formation occur. *relate the structure of the fruit and seed to the structure of the flower in a dicotyledonous plant. *Describe fruit structure including adaptations for seed dispersal	Drawing lab hibiscus flower
Dec 15- Jan 4	**Christmas vacation Three Weeks**		
Week 17 Jan 6th - 10 Week 18 Jan 13th – 17	**CELL DIVISION** ***Vegetative propagation** ***Cloning**	*Understand mitosis and its role in organisms *Understand why asexual reproduction produces genetically identical offspring and explain the value of this in a stable environment. *Describe the process of meiosis and appreciate its importance in the human life cycle.	Lab#18 Genetics PD lab

SEMESTER 2, 2020 **4th Form Biology**

Date 2018	**Topic**	**Objectives** Students should be able to:	**Assessments**
Week 1 Jan 20-24	**Genetic variation**	Understand that variation can be genetic or environmental *Define and describe variation *Distinguish between continuous and discontinuous variation *Explain the causes of genetic variation *Explain the importance of genetic variation	
Week 2 Jan 27—31 Week 3 Feb 3-7	Natural selection and the formation of new species	*Appreciate the importance of the work of Charles Darwin in producing the theory of natural selection. *Understand the basic principles of natural selection *Quote specific examples of natural section in operation. *Understand how Natural selection can lead to the formation of new species.	Research on natural selection Quiz
Week 4 Feb 10 – 14 Week 5 Feb 17— 21	**Natural selection**	*Explain what is meant by artificial selection. *Appreciate the difference between artificial selection and natural selection. *Quote specific examples of artificial selection. *Understand the principles of genetic engineering *Quote specific examples of the use of genetic engineering.	Poster on artificial and natural selction
Week 6 Feb 24 – 28 Week 7 March 2 – 6	CXC Drill and practice	Develop study guide for DIPLOMA EXAM	
Week 8 March 9 – 13	CXC Drill and practice		
April 6-17	EASTER BREAK	Two weeks	
Week 9 April 20 - 24	Review week		
Week 10 April 27 – may 1st	**EXAM**		