IMMACULATE CONCEPTION HIGH SCHOOL

GRADE 9 BIOLOGY SYLLABUS

The grade 9 Biology course will introduce students to some of the important concepts in the subject. Students should develop an awareness of the structures and functions of body systems that help us to deal with the environment in which we live.

A practical based approach is required as far as possible with students being allowed to work in small groups at activities that will enhance their understanding. The use of charts, diagrams, models, transparencies and the computer as teaching aids will go a far way in providing concrete examples to which students can relate and which would then aid their understanding.

Students should bear in mind that their performance in the grade 9 programme will determine whether or not they are allowed to carry the subject in grades 10 and 11, where some of these topics will be revisited.

The following topics will be covered:

TERM 1

Working like a Scientist

- Identify and state problems
- Formulate hypotheses
- Plan and design experiments (fair tests) to solve specific problems

Sensing and Responding to Our Environment

Senses and Sense Organs

- Importance of responding to stimuli in the environment
- List the sense organs in human beings
- Recognize that each sense organ is made up of cells sensitive to only one kind of stimulus
- Identify the stimulus that affects each sense organs
- Structure and function of the skin – temperature regulation
- Perform investigations on the sense organs
- Use annotated diagrams to explain how humans see
- Describe how short-sightedness is corrected
- Describe how long-sightedness is corrected
- Use annotated diagrams to explain how humans hear

Transport in Living Things

Transport in Plants

- Explain why a complex organism requires a specialized transport system
- Describe the tissue of the transport system for a plant and their functions
- Carry out simple activities to show transport tissues in plants
- Label diagram to illustrate the tissues of the transport system in plants
- Describe how roots are adapted to take in water
- Describe the processes of transport in plants i.e. diffusion, osmosis, cohesion, adhesion
- Discuss transpiration and movement of water up a plant by osmosis, root pressure, capillarity (adhesion, cohesion,) and transpiration pull
- Discuss factors affecting the rate of transpiration
- Control of transpiration by stomata
- Transport of manufactured food in phloem
- Discuss experiments proving translocation: radioisoptopes, ringing and using aphids

TERM 2

Transport in Living Things

Transport in Humans

- Investigate the need for a transport system in multicellular organisms
- Identify the types of substances which need to be transported in animals
- Annotate a simple diagram of the human heart
- Relate the basic structure of the human heart to its function
- Trace the flow of blood through the heart and around the body
- Relate the structure of arteries, veins and capillaries to their functions
- Identify the main components of blood and state their basic functions
- List the functions of blood
- Explain why blood functions as a transport medium in animals

Coordination

Nervous System

- Discuss how stimuli affect the human body
- State that the brain and spinal cord comprise the Central Nervous System (CNS) which coordinates the body's responses.
- Structure and function of neurons – motor, relay and sensory

- Discuss the functions and importance of the Automatic Nervous System
- Name the main parts of the human brain and state their basic functions.
- Differentiate between voluntary and involuntary /reflex actions.
- Explain the importance of reflex actions using examples.

The Endocrine System

- Describe the endocrine system as consisting of ductless glands that respond to internal stimuli by producing hormones.
- Identify selected endocrine glands, their location, the hormones they produce and their importance in maintaining the internal environment
- Compare the nervous system with the endocrine system

TERM 3

Embryo Development and Birth Control

- State that the fertilised egg (zygote) undergoes repeated cell divisions to produce an embryo which becomes implanted in the uterus
- Identify key structures in a pregnant uterus (placenta, amniotic sac, amniotic fluid, umbilical cord and uterine wall) and state their basic functions in the growth and development of the human embryo/foetus.
- Describe how the embryo obtains nutrients and oxygen and eliminates waste.
- Describe the effects of negative maternal behaviour during pregnancy on the development of the embryo/foetus.
- Explain the importance of prenatal care during pregnancy.
- Critique methods of birth control.
- Assess the importance of family planning
- Evaluate problems associated with teenage pregnancy