

**MEADOWBROOK 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**

### **Osmosis and Diffusion**

- Investigate the process of diffusion
- Explain the process of diffusion
- Investigate the process of osmosis
- Explain the process of osmosis
- Compare diffusion with osmosis

## **Transport in Living Things**

- Explain why a complex organism requires a specialized transport system
- Give one example of a transport system e.g. in the urban area
- 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 the processes of transport in plants i.e. diffusion, osmosis, cohesion, adhesion
- Make inferences about the transport tissues in plants
- Name the organs of the transport system for humans and explain its functions
- Label a simple diagram of the transport system of humans
- List the constituents of blood and their purposes
- List the functions of blood
- Explain why blood functions as a transport medium in animals
- Draw diagrams of the human circulatory system include structure of the heart and blood vessels
- Show a willingness to take care of their circulatory system by recording in their journals the measures they have taken to care for this system
- Classify the diseases of the circulatory system as pathogenic, physiological, hereditary or deficiency diseases
- Suggest ways in which the individual can prevent or minimize the occurrence of these problems
- Identify disorders of the circulatory system that arise from structural problem and those that arise from functional problems

## **Senses and Sense Organs**

- 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
- Do diagrams of the eye, ear, skin (sensitive parts)
- Functions of parts of skin
- Role skin plays in 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
- Simple activities to distinguish among the 'pitch', 'amplitude' and 'quality' of a sound
- Importance of responding to stimuli in the environment

## **Term 2**

### **Nervous System**

- Discuss how stimuli affect the human body
- Identify the organs in the Central Nervous System and give their functions
- Describe voluntary and involuntary actions (reflex actions)
- State what is a simple reflex arc
- Discuss the functions and importance of the Automatic Nervous System

## **The Endocrine System**

- Identify the endocrine glands and the hormones they secrete
- Discuss how these hormones affect the human body
- Compare nervous and endocrine systems

# **Term 3**

## **Pregnancy and Health**

- Realize that all the needs of a developing embryo are supplied by the female parent
- Appreciate that the characteristics that make an organism unique are determined by the makeup of the male cell and the female cell from the parents
- State the functions of the placenta, amniotic fluid and uterus wall in the growth and protection of the human embryo
- Describe the processes involved in the development of the foetus
- Discuss the importance of and appreciate the importance of a proper diet during pregnancy
- State that nutrients pass to the embryo along the umbilical cord and that this is also the route along which disease organisms, drugs and other dangerous materials can pass
- Identify the effects of diet, alcohol, drugs and cigarette smoking on the developing embryo