BIOLOGY

Unit 1

How Do Organisms Regulate Their Functions?

COURSE OUTLINE:

In this unit students examine the cell as the structural and functional unit of life, from the single celled to the multicellular organism, including the requirements for sustaining cellular processes. Students focus on cell growth, replacement and death and the role of stem cells in differentiation, specialisation and renewal of cells. They explore how systems function through cell specialisation in vascular plants and animals, and consider the role homeostatic mechanisms play in maintaining an animal's internal environment.

AREAS OF STUDY:

- How do cells function?
- How do plant and animal systems function?
- How do scientific investigations develop understanding of how organisms regulate their functions?

OUTCOMES:

On completion of this unit, students should be able to:

1. Explain and compare cellular structure and function and analyse the cell cycle and cell growth, death and differentiation.

2. Explain and compare how cells are specialised and organised in plants and animals, and analyse how specific systems in plants and animals are regulated.

3. Adapt or design and then conduct a scientific investigation related to function and/or regulation of cells or systems, and draw a conclusion based on evidence from generated primary data.

ASSESSMENT:

- A poster/presentation
- Practical reports
- Second-hand data analysis
- Problem solving involving biological concepts, skills and/or issues
- Tests
- A report of a student designed or adapted investigation.

Unit 2

How Does Inheritance Impact on Diversity?

COURSE OUTLINE:

In this unit students explore reproduction and the transmission of biological information from generation to generation and the impact this has on species diversity. Students analyse the advantages and disadvantages of asexual and sexual reproductive strategies, including the use of reproductive cloning technologies.

AREAS OF STUDY:

- How is inheritance explained?
- How do inherited adaptations impact on diversity?
- How do humans use science to explore and communicate contemporary bioethical issues?

OUTCOMES:

On completion of this unit, students should be able to:

1. Explain and compare chromosomes, genomes, genotypes and phenotypes, and analyse and predict patterns of inheritance.

2. Analyse advantages and disadvantages of reproductive strategies, and evaluate how adaptations and interdependencies enhance survival of species within an ecosystem.

3. Identify, analyse and evaluate a bioethical issue in genetics, reproductive science or adaptations beneficial for survival.

ASSESSMENT:

- A poster/presentation
- Media response
- Practical reports
- Second-hand data analysis
- Problem solving involving biological concepts, skills and or issues
- Tests
- An investigation of an issue with genetics and/or reproductive science

S or N based on the demonstrated achievement of the outcomes specified for the unit.