LLOYD WILLIAMSON
SCHOOLS

Year 9 Biology

Curriculum

Year 9 Biology Curriculum -

Introduction

In Year 9, students will build on prior knowledge and skills and learn about genetics, uncovering the secrets of heredity and how traits are passed down from generation to generation. Students will also learn about evolution, the process that has shaped the diversity of life on Earth. They will explore the human body in greater detail, studying the interactions between different organ systems and the impact of health and disease.

Learning Objectives:

1. *Ecology:*

Ecosystems:

- Definition of an ecosystem.
- Components of an ecosystem (biotic and abiotic factors).
- Food chains and food webs.
- Energy flow through ecosystems.

Population Dynamics:

- Population size, growth, and decline.
- Limiting factors (e.g., food, space, predators).
- Pyramids of number and pyramids of biomass.

Biodiversity:

- Definition of biodiversity.
- Importance of biodiversity.
- Threats to biodiversity (habitat destruction, pollution, climate change).
- Conservation efforts.

2.Genetics:

Cells and DNA:

- The role of DNA in cells.
- Structure of DNA (nucleotides, double helix).
- Chromosomes and genes.

Mitosis and Meiosis:

- Cell division processes.
- Differences between mitosis and meiosis.
- Inheritance of traits.

Genetic Variation:

- Sources of genetic variation (mutations, sexual reproduction).
- The role of genetic variation in evolution.

3. Evolution:

Theory of Evolution:

- Darwin's theory of evolution by natural selection.
- Evidence for evolution (fossil record, comparative anatomy, embryology, molecular biology).
- Adaptation and speciation.

Human Evolution:

- The evolution of humans from apes.
- Key hominid species (Australopithecus, Homo erectus, Homo sapiens

4. Health and Disease:

The Immune System:

- Components of the immune system (antigens, antibodies, lymphocytes).
- Innate and adaptive immunity.
- Vaccines and their role in preventing disease.

Non-Communicable Diseases:

- Types of non-communicable diseases (e.g., cancer, heart disease, diabetes).
- Risk factors for non-communicable diseases.
- Prevention and treatment strategies.

Assessment:

- Regular quizzes and tests
- Practical assessments
- Project work (e.g., researching a specific topic)

Evaluation and Review

The curriculum will be reviewed annually to ensure its effectiveness. Feedback from students, teachers, and parents will be considered in the review process.

Updated August 2024
Next review: August 2025