Biology GCSE Y10 – Course Overview

Biology helps us understand living organisms and the complex interactions that sustain life on Earth. In Year 10, students build on their Key Stage 3 knowledge to explore how the human body responds to disease, how organisms obtain and use energy, how body systems work together, and how living things interact within ecosystems. Through practical investigations and scientific enquiry, students develop the knowledge and skills needed to think and work like biologists.

Advent 1: Infection and Response

Students explore the causes of communicable diseases and how the body protects itself against pathogens. Separate Biology students are also introduced to microbiology and the study of microorganisms.

Key areas of study:
• Communicable diseases and pathogens
• Bacterial, viral, fungal and protist diseases
• The human defence system
• Vaccination and medicines
• Introduction to microbiology (separate Biology only)

Advent 2: Microbiology and Bioenergetics

Students develop their understanding of microbiology through practical investigations and required practical work. They then begin to explore how organisms obtain and use energy through photosynthesis and respiration.

Key areas of study:
• Microbiology required practical work (separate Biology only)
• Photosynthesis
• Factors affecting the rate of photosynthesis
• Aerobic and anaerobic respiration
• Metabolism and energy transfer

Lent 1: Organisation – Digestion and Enzymes

Students investigate how the digestive system breaks down food and how enzymes enable vital chemical reactions within living organisms.

Key areas of study:
• The digestive system
• Enzymes and enzyme action
• Factors affecting enzyme activity
• Food tests and required practical work
• Absorption of nutrients

Lent 2: Organisation – The Circulatory System

Students study how substances are transported around the body and examine the structure and function of the heart, blood vessels and blood.

Key areas of study:
• The heart and circulatory system
• Blood vessels and blood components
• Coronary heart disease and treatments
• Lifestyle factors affecting health
• Transport of substances in animals

Trinity 1: Organisation – Plants and Ecology

Students explore how plants are organised to transport substances and carry out photosynthesis. They also revisit ecological sampling techniques introduced in Year 9.

Key areas of study:
• Plant tissues and organs
• Xylem and phloem transport systems
• Transpiration and transpiration rate
• Adaptations for photosynthesis
• Sampling techniques in ecology

Trinity 2: Ecology – Energy Transfer

Students examine the relationships between organisms within ecosystems and investigate how energy is transferred through food chains and food webs.

Key areas of study:
• Trophic levels
• Food chains and food webs
• Biomass transfer
• Energy transfer between organisms
• Efficiency of energy transfer
• Ecosystem interactions