

- Transport in plants: The curriculum covers the need for transport systems in multicellular plants, the structure and function of vascular systems in dicotyledonous plants, transpiration and its environmental factors, the mechanisms of water transport in plants, adaptations of plants to water availability, and the mechanism of translocation.
- Classification and Evolution: The curriculum covers various topics related to biology, including classification, the five kingdoms, phylogeny, evidence for evolution, types of variation, representing variation graphically, adaptations, and changing population characteristics.

- Biodiversity: The curriculum covers topics related to biodiversity, sampling, sampling techniques, calculating biodiversity, calculating genetic biodiversity, factors affecting biodiversity, reasons for maintaining biodiversity, and methods for maintaining biodiversity.
- Communicable diseases: The curriculum covers topics related to animal and plant pathogens, diseases, transmission of communicable diseases, plant and animal defences against pathogens, the immune system, and methods for preventing and treating disease.
- Homeostasis part 1 – Thermoregulation: Study homeostasis principles, focus on feedback loops. Differentiate ectotherms and endotherms' thermoregulation, investigate heat loss by size variation.

Examinations

Paper 1: Biological Processes

- 100 Marks
- 2 hour 15 minutes
- 37% of A level
- Assesses content from Modules 1, 2, 3 and 5

Paper 2: Biological Diversity

- 100 Marks
- 2 hour 15 minutes
- 37% of A level
- Assesses content from Modules 1, 2, 4 and 6

Paper 3: Unified Biology

- 70 Marks
- 1 hour 30 minutes
- 26% of A level
- Assesses content from all Modules 1-6

Autumn

- Exchange and transport: The curriculum covers the need for specialized exchange surfaces, the features of efficient exchange surfaces, and the structures and functions of components in the mammalian gaseous exchange system.
- Transport in animals: The curriculum covers the need for transport systems in multicellular animals, different circulatory systems, the structure and functions of blood vessels, the composition of blood, tissue fluid, and lymph, as well as the mechanisms of gas transport by haemoglobin and the oxygen dissociation curve for foetal and adult haemoglobin.

Summer

- Cell Division: The curriculum covers cell biology topics such as the cell cycle, mitosis, meiosis, cell specialization, and stem cells. Students learn about stages of the cell cycle, mitosis regulation, and the significance of mitosis and meiosis.
- Neuronal Communication Part 1: The curriculum covers communication systems in multicellular organisms and the role of cell signalling. Students study the structure and function of neurones, nervous transmission, and synapses, including practical activities to observe nerve impulses. Additionally, they learn about sensory receptors and how they convert stimuli into nerve impulses, understanding their role in nervous responses.

Spring

- Biological molecules part 2: The curriculum covers topics such as nucleotides, DNA structure, DNA replication, and the genetic code. Students learn through reading, practical experiments, and animations. They understand the structure of nucleotides, DNA, and the genetic code, as well as processes like DNA replication, transcription, and translation.
- Enzymes: The curriculum covers enzyme action, factors influencing enzyme activity, enzyme inhibitors, and cofactors necessary for enzyme-controlled reactions. Students explore these topics through readings and practical investigations.
- Plasma membrane: The curriculum covers membrane structure and function, factors influencing membrane structure and permeability, diffusion, active transport, and osmosis. Students learn about the roles of membranes as barriers, the fluid mosaic model, and the movement of molecules across membrane.

Year 13 Teacher 1

Autumn

- Neuronal Communication Part 2: The curriculum covers topics related to the nervous system, including its organization, the structure and function of the brain, reflex actions, voluntary and involuntary muscles, and the sliding filament model of muscular contraction.
- Hormonal Communication: Study hormonal communication, pancreatic structure, blood glucose regulation, diabetes types and treatments. Explore coordinated responses, heart rate control, and review with exam-style questions and interactive tasks.
- Homeostasis Part 2: Explore excretion's role in maintaining metabolism and homeostasis. Investigate liver structure, function, and histology. Calculate using calibration curves in 'Detecting glucose in urine'. Study kidney structure, nephron function, osmoregulation, and adaptations.

Year 13 Teacher 2

Spring

- Cloning and biotechnology: Cover natural and artificial cloning in plants and animals, microorganisms in biotechnology, culturing microorganisms, and using immobilized enzymes in biotechnology processes.
- Ecosystems: Cover ecosystem components, biomass transfer, recycling processes, succession, and methods for measuring organism distribution and abundance within ecosystems.
- Populations and sustainability: Cover population dynamics, including factors affecting population size, competition, predator-prey relationships, conservation vs. preservation, sustainability, ecosystem management, and impacts of human activities on sensitive ecosystems.

Summer

- Populations and sustainability: predator-prey relationships, conservation vs. preservation, sustainability, ecosystem management, and impacts of human activities on sensitive ecosystems.
- Practical activity reviews
- Examination preparation

Spring

- Plant responses: Students will learn about plant hormones, their roles, experimental evidence, and practical investigations, along with understanding plant responses to abiotic stress, herbivory, tropisms, and the commercial applications of plant hormones.
- Energy for biological processes (photosynthesis): Students will explore energy cycles, ATP synthesis, photosynthesis, factors affecting photosynthesis, and conduct practical investigations to understand these concepts.
- Respiration: Students will delve into the processes of glycolysis, linking glycolysis and the Krebs cycle, the Krebs cycle, oxidative phosphorylation, anaerobic respiration, and respiratory substances, conducting practical investigations and understanding cellular respiration.

Summer

- Respiration: Students will delve into the processes of glycolysis, linking glycolysis and the Krebs cycle, the Krebs cycle, oxidative phosphorylation, anaerobic respiration, and respiratory substances, conducting practical investigations and understanding cellular respiration.
- Practical activity reviews
- Examination preparation

Autumn

- Genetics of living systems: Students will explore mutations and variation, understanding gene mutations and their effects, delve into the control of gene expression at transcriptional, post-transcriptional, and post-translational levels, and investigate the genetic control of body plans, including the roles of mitosis and apoptosis.
- Patterns of inheritance: Explore variation, inheritance, genetic patterns, phenotypic ratios, evolution factors, and artificial selection.
- Manipulating Genomes: Cover DNA profiling, sequencing, and analysis, including PCR and electrophoresis principles, genetic engineering techniques, and ethical considerations.