



Year 10 Biology



AUTUMN TERM

Organ systems:

- Food tests
- Digestive system adaptations
- Digestive enzymes
- Lung adaptations for gas exchange
- Heart structure and cardiac cycle
- Blood and vessels

Disease:

- Heart disease and treatments
- Drug development
- Vaccination
- Monoclonal antibodies

SPRING TERM

Cells:

- Cell cycle
- Cancer
- Stem cells and their uses

Respiration:

- Aerobic and anaerobic respiration
- Fermentation
- Exercise

Plants:

- Photosynthesis and its products
- Leaf adaptations
- Transport in plants
- Plant diseases and deficiencies
- Distribution and sampling

SUMMER TERM

Ecosystems:

- Competition and adaptation
- Food webs and interdependence
- Carbon and water cycles
- Deforestation and land use
- Decomposition
- Agriculture
- Impacts of climate change
- Managing biodiversity

YEAR 10 CURRICULUM OVERVIEW

Building on core knowledge and skills developed in KS3 science, including: **describing** food tests and drug development, **explaining** enzyme activity and effects of exercise, **evaluating** heart disease treatments and agriculture practices, **comparing** aerobic and anaerobic respiration, **interpreting** plant distribution, **calculating** rates and areas, **plotting and interpreting** line and bar graphs, **relating** structures to functions



Year 11 Biology



AUTUMN TERM

Coordination and homeostasis:

- Nervous system- impulse transmission, brain, eye
- Reflexes
- Endocrine system- glands and their hormones
- Glucose regulation and diabetes
- Reproductive hormones, contraception and IVF
- Plant hormones and industry

Inheritance:

- Genes and DNA
- Meiosis
- Asexual and sexual reproduction
- Inherited disorders
- Cloning

SPRING TERM

Evolution:

- Variation
- Natural selection
- Evidence for evolution
- Extinctions
- Speciation
- Selective breeding
- Genetic engineering
- Classification

SUMMER TERM

Building confidence through consolidation of skills, development of problem solving and synoptic thinking.

YEAR 11 CURRICULUM OVERVIEW

Building on core knowledge and skills developed in year 10 Biology, including: **describing** reflex arcs and cloning, **explaining** speciation, **evaluating** IVF and diabetes treatments, **comparing** sexual and asexual reproduction, **interpreting** blood glucose data, **calculating** percentage changes, **plotting and interpreting** line and bar graphs, **relating** structures to functions



Year 12 Biology



AUTUMN TERM

Molecular biology

- Biological molecules
- Digestion and enzymes
- Membranes and transport
- Exchange and absorption

Cellular biology

- Prokaryotic, eukaryotic and viral structures
- Methods of studying cells
- Cell replication
- DNA replication
- Immunity

SPRING TERM

Physiology

- Mass transport in mammals and fish
- Cardiac cycle
- Haemoglobin and its adaptations
- Cardiovascular disease
- Mass transport in plants

Genetics

- Protein synthesis
- Mutations and their effects
- Meiosis
- Genetic diversity
- Adaptation and selection
- Investigating bacterial populations

SUMMER TERM

Bioenergetics

- Aerobic and anaerobic respiration
- Photosynthesis
- Methods of investigating rates

Biodiversity and communities

- Species and taxonomy
- Courtship
- Phylogeny
- Measuring biodiversity

YEAR 12 CURRICULUM OVERVIEW

Building on core knowledge and skills developed in GCSE Biology, applying knowledge and understanding of scientific processes and procedures, and analysing, interpreting and evaluating evidence. This includes **describing** exchange processes, **comparing** transport systems, **identifying** enzyme mechanisms, **explaining** mutation effects, **calculating** indices, **interpreting** population data, **evaluating** investigative procedures and **predicting** impacts of selection pressures.



Year 13 Biology



AUTUMN TERM

Bioenergetics and energy transfers

- Aerobic and anaerobic respiration
- Photosynthesis
- Productivity and energy flow
- Nutrient cycles

Survival and responses

- Animal responses- taxis and kinesis
- Plant responses- auxins and tropism
- Receptors- light and pressure

Genetics

- Inheritance
- Variation in populations
- Speciation
- Succession

SPRING TERM

Nervous responses

- Reflexes and action potentials
- Synaptic transmission
- Control of heart rate
- Muscular contraction

Homeostasis

- Glucoregulation
- Osmoregulation

Control of gene expression

- Cell potency
- Regulation of protein synthesis
- Cancer
- Genome projects
- DNA technology

SUMMER TERM

- **Building confidence through consolidation of skills, development of problem solving and synoptic thinking.**

YEAR 13 CURRICULUM OVERVIEW

Building on core knowledge and skills developed in Y12 Biology, applying knowledge and understanding of scientific processes and procedures, and analysing, interpreting and evaluating evidence. This includes **describing** bioenergetic processes, **comparing** agricultural practices, **identifying** limitations of models, **explaining** the importance of transport, **calculating** statistical significance, **interpreting** genetic diagrams, **evaluating** uses of DNA technology and **predicting** phenotypic ratios.