



Key Stage 3 Curriculum Overview- Biology

Progression from Key Stage 2 and Progression through Key Stage 3:

	Autumn Term	Spring Term	Summer Term
Year 6	<p>Students at the end of Key Stage 2 will be able to:</p> <ul style="list-style-type: none"> develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future. describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals give reasons for classifying plants and animals based on specific characteristics identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function Describe the ways in which nutrients and water are transported within animals, including humans. recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. 		
Year 7	<p>Transitional content</p> <ul style="list-style-type: none"> The human body Space science enrichment (2 weeks) Cells topic – Using microscopes and working scientifically to identify differencing in cell structure. Different adaptations in cells and that cells can be both unicellular and multicellular. 	<ul style="list-style-type: none"> Organisms topic – Systems in the human body and understanding how the joints and muscles function and associated problems with organ systems Assessment Point 1 (APS) Ecosystems topic – food webs and interactions of toxins in the environment. Predator and prey relationships and the importance of insects. Plant structure and reproduction with practical opportunities 	<ul style="list-style-type: none"> Ecosystems continued – seed dispersal and practical investigation Genes topic- variation in humans, reproduction systems with fertilisation and pregnancy including the effects of smoking and alcohol AP2 RSE – see separate scheme of work
Year 8	<ul style="list-style-type: none"> Space science enrichment (including trip) (2 weeks) HSW topic – 3 week practical investigation 	<ul style="list-style-type: none"> Ecosystems topic – Plant organs, photosynthesis and structure and function of leaves. Different types of respiration and fermentation. 	<ul style="list-style-type: none"> Genes topic – Biodiversity and adaptations, natural selection, extinction AP2

	<ul style="list-style-type: none"> • Cells – movement of substances. Specialised cells including bacteria and fungi. • Human disease and defence systems. • Organisms topic- breathing and gas exchange (Required practical opportunities). • Effects of smoking, asthma and exercise on breathing. Healthy diet • AP1 		<ul style="list-style-type: none"> • Enrichment topic – understanding and interpreting scientific literature • Field trip opportunity – science outside • RSE – see separate scheme of work
Year 9	<ul style="list-style-type: none"> • Cells Topic – Specialised cells, prokaryotic and Eukaryotic cells and movement of substances. Microscope calculations. • Organisms topic - Digestion and enzymes. Respiratory system and the Heart • AP1 	<ul style="list-style-type: none"> • Organisms Topic continued – Homeostasis and the nervous system. • Ecosystems - Factors affecting the rate of photosynthesis, movement and use of minerals, water and glucose in plants. • Biodiversity and fossils and evolution and classification. • Feeding relationships • AP2 	<ul style="list-style-type: none"> • Genes topic – Inheritance and variation, sexual and asexual reproduction. Natural selection. • Non-communicable diseases and drugs • AP3

By the end of Key Stage 3 a student should be able to:

Have an understanding of the fundamentals of living organisms and life processes including the 'big ideas; in biology, including: links between structure and function in living organisms, factors affecting life processes such as respiration and photosynthesis, effects of variation and inheritance on biodiversity and how humans affect the natural world around us.

Have an understanding of key scientific investigative procedures and understand how to answer scientific questions about the natural world around them, including recording, collection and analysing data, evaluating procedures and identify further questions.

Be able to critically think about the uses and implications of science and scientific advancements today and for the future

Be developing the ability to read and interpret scientific text

Describe associated processes and key characteristics in common language, beginning to use technical terminology accurately and precisely building an extended specialist vocabulary.

Be able to apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data, using numerical values and mathematical representations.

Be able to relate scientific explanations to phenomena in the world around them and use modelling and abstract ideas to develop and evaluate explanations.

Working scientifically – across all science disciplines

- pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility
- understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review
- Evaluate risks.
- ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience
- make predictions using scientific knowledge and understanding
- select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate
- use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety
- make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements
- apply sampling techniques.
- apply mathematical concepts and calculate results
- present observations and data using appropriate methods, including tables and graphs
- interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions
- present reasoned explanations, including explaining data in relation to predictions and hypotheses
- evaluate data, showing awareness of potential sources of random and systematic error
- identify further questions arising from their results.
- understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature
- use and derive simple equations and carry out appropriate calculations
- undertake basic data analysis including simple statistical techniques.