



Year 8: Biology

Curriculum Intent: Students will build upon the core subject knowledge and procedural knowledge in the four key areas; Life Processes, Cells, Ecosystems and Modern Biology. The models and explanations become more complex, and the students begin to learn more about the structure of cells and the role of different types of cell in biological processes. Application of the core knowledge of the scientific method is expanded into areas such as breathing and circulation. Investigative skills will build on the work done in year 7 with the caffeine investigation and further work on graph drawing and interpretation. Key questions will continue to be the central focus to lessons, and retrieval of the knowledge from earlier topics will be crucial part of this.

	Topic 1 Life Processes	Topic 2 Inside cells	Topic 3 Ecosystems	Topic 4 Modern Biology
Key ideas	<ul style="list-style-type: none"> Breathing <ul style="list-style-type: none"> Structure and function Mechanism Circulatory system <ul style="list-style-type: none"> Structure and function Illness – Asthma and Smoking <ul style="list-style-type: none"> Effect of exercise 	<ul style="list-style-type: none"> Photosynthesis <ul style="list-style-type: none"> Role of stomata (gas exchange) Process Uses Respiration – Word equation Aerobic and Anaerobic (including fermentation) Enzymes – only as biological catalyst 	<ul style="list-style-type: none"> Ecosystems <ul style="list-style-type: none"> Different levels of an ecosystem Nutrient cycling (carbon), including decomposers Variation <ul style="list-style-type: none"> Genetic Environmental Genetics <ul style="list-style-type: none"> -Genotype and phenotype 	<ul style="list-style-type: none"> Recreational drugs Genomic impact on medicines of the future Natural selection and its links to evolution <ul style="list-style-type: none"> -evidence (fossils and phylogeny) Farming practices <ul style="list-style-type: none"> Selective breeding Biotechnology
Sequence of Learning - Key Questions	<ul style="list-style-type: none"> What is breathing? How does the body transport useful substances to different parts? How do the respiratory and circulatory systems work in unison? Identify and explain how certain factors affect how our respiratory and 	<ul style="list-style-type: none"> Why does all life on Earth rely on photosynthesis? What is respiration and how is it different to breathing? Why does all life on Earth rely on enzymes? 	<ul style="list-style-type: none"> How do animals rely on each other within an ecosystem? What is interdependence? What is variation and how does it occur? How to use genetic diagrams to predict physical characteristics? 	<ul style="list-style-type: none"> What are recreational drugs? How can we predict the risk of certain illnesses and how will we treat them? (Including future developments) How can we prove that dinosaurs are related to chickens? And how has this impacted classification? How can Science help us feed the world?

	circulatory systems work in unison?			
Vocabulary	<p>Accuracy, Precision, Repeatability, Reproducibility.</p> <ul style="list-style-type: none"> • Diaphragm, Gas exchange, alveoli, lungs, bronchi • Heart, double circulatory system, valves, pulse, resting heart rate • Illness, Asthma, Smoking illnesses 	<p>Accuracy, Precision, Repeatability, Reproducibility.</p> <ul style="list-style-type: none"> • Oxygen, carbon dioxide, glucose, energy, products, reactants • “ “ • Lock and key, scientific models 	<p>Accuracy, Precision, Repeatability, Reproducibility.</p> <ul style="list-style-type: none"> • Ecosystem, habitat, population, community, decomposers, carbon cycle • Alleles, genes, genotype, phenotype, dominant, recessive, heterozygous, homozygous 	<p>Accuracy, Precision, Repeatability, Reproducibility.</p> <ul style="list-style-type: none"> • Drugs, recreational, prescription, stimulants, depressants • Genome, DNA, Chromosomes • Natural selection, evolution, variation, adaptation, phylogeny • Selective breeding, inbreeding, Biotechnology, genetic engineering
Practical Skills	<ul style="list-style-type: none"> • Model of lungs, bell jar lungs demo • Pluck demo • Heart dissection demo/practical • Heartrate and exercise investigation 	<ul style="list-style-type: none"> • Starch testing leaves • Microscopes – look at stomata of different plants • Investigate different plants (that contain different amounts of catalase) on the breakdown of hydrogen peroxide. 	<ul style="list-style-type: none"> • Sampling • Pond dipping • Investigating variation amongst a class 	<ul style="list-style-type: none"> • Investigating the effects of caffeine on heartrate and reaction time • Extracting DNA • Cloning geraniums/ cauliflower
Assessment (Related to mastery grids)	Model of breathing systems (evaluation task)	Analysis and evaluation of catalase experiment.	Graph drawing assessment	Caffeine experiment write-up