

KS4 Year 11 Combined Biology Curriculum

Curriculum Intent: We seek through an ambitious and engaging curriculum to develop a sense of curiosity to wonder why and how things work, and to provide skills and knowledge to find the answer. The curriculum is spiralled to introduce and build on key scientific concepts to help students understand complex ideas enriched by opportunities outside the classroom.

Biology Curriculum Overview.

Biology is the study of life, and it closely connects with both Physics and Chemistry. In Year 7, the course begins with an exploration of the smallest unit of life—the cell—before moving on to the chemical basis of life, including DNA and the genome.

Next, students study organs and systems, followed by an examination of health and disease and their impact on the human body. The course then introduces biochemistry, lifecycles, and the concept of growth as a fundamental aspect of living organisms.

After exploring lifecycles, the curriculum covers human and plant reproduction. This leads into the topics of inheritance and ecosystems, where students learn about genetic transmission and the interactions within ecological systems.

Cells and biological organisation are revisited in greater detail, followed by a focus on infections and the body's immune response. Students then consolidate their understanding of biochemistry.

Taking advantage of the summer months, the course includes ecological fieldwork to investigate ecosystems in a hands-on way. The year concludes with a study of homeostasis, the human nervous and endocrine systems, and a final look at inheritance, variation, and evolution.

	Autumn Term		Spring Term	Summer Term
Main Topic	B7 – Ecology Recap	B5 - Homeostasis	B6 – Inheritance, Variation & Evolution (and B5 recap)	Revision & Exams
Key Concepts	pollution, global warming, biodiversity, peat bogs	Nervous system – structure & reflex arc. Endocrine system, reproductive hormones, blood glucose concentration control, diabetes RP: Reaction times	Asexual reproduction, DNA & the genome, Genetic disorders, variation, evolution by natural selection, classification, extinction	Revise required practical's Recap exam techniques & skills Practice scientific skills e.g. writing methods, identifying variables, calculations & graphs
Curriculum links	KS3: 8B4 – Relationships in ecosystem 8C2 – Climate 7C1 – Particle Model 9C2 – Chemical reactions 7C3 – Earth's structure	KS3: 7B1 – Skeletal & muscular systems 8B3 – Health & Disease 8P4 – Electricity 9P1 – Energy 7B3 - Reproduction	KS3: 7B3 – Reproduction 9B2 – Inheritance & Variation 8C2 – Climate KS4: B1 – Cell Biology B2 – Organisation	All units including physics & chemistry

	7P3/9P2 - Energy KS4: P1 – Energy B2 – Organisation B4 – Bioenergetics C9 – Atmosphere C10 – using resources	KS4: B1 – Cell Biology B2 - Organisation		
Cross-curricular links	LIFE – Drug use, drink driving, reaction times. Maths – calculating means PE/Sport - Reaction times History – history of medicine through time Geography – Sampling & Climate History - Extinction		LIFE – Non-communicable diseases R.E. - religious/ethical debates around natural selection Maths- calculating probabilities/percentages/fractions	
Interleaving of skills	Complex graphs with 2 tend lines – relationships Calculating means & areas Identifying variables Writing a method Suggesting improvements Controlling variables Using conversion tables Making a prediction Altering independent variables Using fair samples Interpreting models		Punnett squares Calculating probabilities/percentages/fractions/ratios Interpreting complex keys/family trees Making predictions Theories changing over times Complex models of evolution Using a range of evidence	
Literacy	B7 - biodiversity, habitat, biotic, abiotic, food chain, producer, consumer, predator, prey, pollution, destruction, deforestation, eutrophication, bioaccumulation, toxin, pesticide, herbicide, insecticide	B5 - Reaction, Reflex, Automatic, Neurone, Synapse, Conscious, Effector, Receptor, Response, Hormone. Target, Homeostasis, Negative feedback	Gene, Allele, Genome, Genotype, Phenotype, Homozygous, Heterozygous, Ratio, Probability, inherited, selection, classification, dominant, recessive	Variable, Valid, Reliable, Accurate, Mean, Outlier, Anomaly, Evaluate, Improvement, Compare, Comparative
Cultural capital	Understanding global warming and the effects of humans Understanding how your body works Impact of drugs on the body Reflexes & Reaction times – dangerous situations		Gregor Mendel Darwin Jean Baptise Lamark Wallace Developing balanced views considering ethics & religion GM organisms	
Careers	Neurologist Radiographer Radiologist		Geneticist Lifestyle and Wellness Coach	
Assessment	B7 KMP B7 CKT B5 – KMP		B6 – KMP B6 – CKT Mock 3 – Paper 2	Summer Exam Series

	B5 – CKT Mock 2 – Paper 1		
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