

KS4 Year 11 Single 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 spiralsised 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	B5 - Homeostasis	B6 – Inheritance, Variation & Evolution	Revision & Exams
Key Concepts	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: 7B1 – Skeletal & muscular systems 8B3 – Health & Disease 8P4 – Electricity 9P1 – Energy 7B3 - Reproduction KS4: B1 – Cell Biology B2 - Organisation	KS3: 7B3 – Reproduction 9B2 – Inheritance & Variation 8C2 – Climate KS4: B1 – Cell Biology B2 – Organisation	All units including physics & chemistry
Cross-curricular links	LIFE – Drug use, drink driving, reaction times. Maths – calculating means PE/Sport - Reaction times	LIFE – Non-communicable diseases R.E. - religious/ethical debates around natural selection	

	History – history of medicine through time	Maths- calculating probabilities/percentages/fractions	
Interleaving of skills	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	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 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	Genetisist Geneologist Life Coach	
Assessment	B5 – KMP B5 – CKT Mock 2 – Paper 1	B6 – KMP B6 – CKT Mock 3 – Paper 2	Summer Exam Series