

SUBJECT: BIOLOGY



KS5 CURRICULUM PLAN 2020-21

KS4 Knowledge and key skills

YEAR 12	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC						
Knowledge	Biological molecules monomers & polymers Cells eukaryotic and prokaryotic cell ultrastructure. Mitosis	Biological molecules enzymes Cells cell transport and immune system, phagocytosis and lymphocytes, cell mediated immunity, humoral immunity, monoclonal antibodies	Cells immunity vaccination, ELISA test Organisms exchange substances with their environment gas exchange	Organisms exchange substances with their environment heart & blood Genetic information, variation and relationships between organisms DNA, genetic code & protein synthesis	Organisms exchange substances with their environment plant transport Genetic information, variation and relationships between organisms sources of variation, meiosis	Genetic information, variation and relationships variation & selection Energy transfers in and between organisms Energy and ecosystems
Skills	Practical 2 Preparation of stained squashes of cells from plant root tips; setup and use of an optical microscope to identify the stages of mitosis in these stained squashes and calculation of a mitotic index	Practical 1. Investigation into the effect of a named variable on the rate of an enzyme-controlled reaction Practical 3. Production of a dilution series of a solute to produce a calibration curve with which to identify the water potential of plant tissue	Practical 4. Investigation into the effect of a named variable on the permeability of cell-surface membranes Practical 6. Use of aseptic techniques to investigate the effect of antimicrobial substances on microbial growth	Practical 5. Dissection of animal or plant gas exchange or mass transport system or of organ within such a system. Heart dissection, fish head & locust dissection.	Statistical tests in Biology	Sampling techniques
Key Vocab	Eukaryotic prokaryotic carbohydrate endoplasmic reticulum nucleolus	Facilitated diffusion enzyme substrate complex cotransport	Epithelium ELISA B lymphocyte T Lymphocyte	Codon anticodon transcription translation	Directional selection mass flow hypothesis	Ecosystem population random sampling community

YEAR 13	SUMMER 2	SUMMER 1	SPRING 2	SPRING 1	AUTUMN 2	AUTUMN 1
TOPIC						
Knowledge		Review	The control of gene expression gene expression & GM	Genetics, populations, evolution and ecosystems inheritance Organisms respond to changes in their internal and external environments Glucose & water control	Energy transfers in and between organisms between organisms sampling respiration Organisms respond to changes in their internal and external environments Nerve impulse, synapses, muscle action	Energy transfers in and between organisms between organisms sampling photosynthesis Organisms respond to changes in their internal and external environments Taxis & kinesis, plant response, receptors
Skills		Exam skills & essay writing	Exam skills & essay writing	Practical 11. Production of a dilution series of a glucose solution and use of colorimetric techniques to produce a calibration curve with which to identify the concentration of glucose in an unknown 'urine' sample	Practical 7. Use of chromatography to investigate the pigments isolated from leaves of different plants, Practical 8. Investigation into the effect of a named factor on the rate of dehydrogenase activity in extracts of chloroplasts Practical 9. Investigation into the effect of a named variable on the rate of respiration of cultures of single-celled organisms	Biology Field trip Energy transfers in and between organisms between organisms sampling Practical 12. the effect of a named environmental factor on the distribution of a given species Practical 10. the effect of an environmental variable on the movement of an animal using either a choice chamber or a maze
Key Vocab			PCR, transcription factors, restriction endonucleases	dihybrid, monohybrid, epistasis, autosomal linkage, phenotype	dehydrogenase, coenzyme, oxidative phosphorylation	pacinian corpuscle, IAA, taxis, kinesis, RUBISCO

Key Knowledge Transfer