

# SUBJECT: BIOLOGY



## KS5 CURRICULUM PLAN

KS4 Knowledge and key skills

YEAR 12	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
<b>TOPIC</b>						
<b>Knowledge</b>	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 <b>Organisms exchange substances with their environment</b> gas exchange	<b>Organisms exchange substances with their environment</b> heart & blood <b>Genetic information, variation and relationships between organisms</b> DNA, genetic code & protein synthesis	<b>Organisms exchange substances with their environment</b> plant transport <b>Genetic information, variation and relationships between organisms</b> sources of variation, meiosis	<b>Genetic information, variation and relationships</b> variation & selection <b>Energy transfers in and between organisms between organisms</b> Energy and ecosystems
<b>Skills</b>	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	<b>Practical 1.</b> Investigation into the effect of a named variable on the rate of an enzyme-controlled reaction <b>Practical3.</b> Production of a dilution series of a solute to produce a calibration curve with which to identify the water potential of plant tissue	<b>Practical 4.</b> Investigation into the effect of a named variable on the permeability of cell-surface membranes <b>Practical 6.</b> Use of aseptic techniques to investigate the effect of antimicrobial substances on microbial growth	<b>Practical 5.</b> 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
<b>Key Vocab</b>	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
<b>TOPIC</b>						
<b>Knowledge</b>		Review	The control of gene expression gene expression & GM	<b>Genetics, populations, evolution and ecosystems</b> inheritance <b>Organisms respond to changes in their internal and external environments</b> Glucose & water control	<b>Energy transfers in and between organisms between organisms</b> sampling respiration <b>Organisms respond to changes in their internal and external environments</b> Nerve impulse, synapses, muscle action	<b>Energy transfers in and between organisms between organisms</b> sampling photosynthesis <b>Organisms respond to changes in their internal and external environments</b> Taxis & kinesis, plant response, receptors
<b>Skills</b>		Exam skills & essay writing	Exam skills & essay writing	<b>Practical 11.</b> 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	<b>Practical 7.</b> Use of chromatography to investigate the pigments isolated from leaves of different plants, <b>Practical 8.</b> Investigation into the effect of a named factor on the rate of dehydrogenase activity in extracts of chloroplasts <b>Practical 9.</b> Investigation into the effect of a named variable on the rate of respiration of cultures of single-celled organisms	<b>Biology Field trip</b> <b>Energy transfers in and between organisms between organisms</b> sampling <b>Practical 12.</b> the effect of a named environmental factor on the distribution of a given species <b>Practical 10.</b> the effect of an environmental variable on the movement of an animal using either a <i>choice chamber or a maze</i>
<b>Key Vocab</b>			PCR, transcription factors, retraction endonucleases	dihybrid, monohybrid, epistasis, autosomal linkage, phenotype	dehydrogenase, coenzyme, oxidative phosphorylation	pacinian corpuscle, IAA, taxis, kinesis, RUBISCO

Key Knowledge Transfer