



Biology: Curriculum Overview

Year 13

Half Term	Teacher 1		Teacher 2		How will I be assessed?
	Topic studied	What will I learn?	Topic studied	What will I learn?	
Year 13 Autumn 1	Topic 5: Energy Transfer in and Between Organisms: Photosynthesis Respiration	Light dependent and light independent stages Limiting factors Glycolysis Krebs Electron transfer chain	Topic 7: Genetics, populations, evolution and ecosystems: Populations in ecosystems	Ecosystems, community, population, habitat, niche, Carrying capacity, including biotic factors and interactions, inter and intraspecific, Recap of succession including management, Effect of abiotic factors hostile vs less hostile, Estimating population sizes – motile (MRR) and slow/non-motile using random sampling, Dynamic systems can change diversity.	Past paper exam questions <u>Assessed practical 7</u> <u>Assessed Practical 8</u> 4-week short answer test
Year 13 Autumn 2	Energy Transfer in and Between Organisms: Respiration	Anaerobic respiration Plant tropisms	Inheritance	Genotype and phenotype, Alleles and genes, Mono and dihybrid predictions using diagrams and dominance,	Past paper questions <u>Assessed practical 9</u> Midterm test <u>Assessed practical 10</u>

	<p>Topic 6: Organisms respond to changes in their environments: Response to stimuli</p>	<p>Animal responses</p>	<p>Populations</p> <p>Evolution leading to speciation</p>	<p>Sex-linkage, autosomal linkage, multiple alleles and epistasis, Chi squared test.</p> <p>Species as populations, Gene pool and allele frequency, Hardy-Weinberg Principal including assumptions and calculation.</p> <p>Variation within a population, Differential survival and reproduction, Stabilising, directional, disruptive selection, Evolution as a change in allele frequencies, Allopatric and sympatric speciation, Genetic drift in small populations.</p>	<p>Past paper questions</p>
<p>Year 13 Spring 1</p>	<p>Nervous Coordination and Muscles: Response to stimuli</p>	<p>Nervous control Neurones The nerve impulse, action potential Synapses and drugs</p> <p>The Pacinian corpuscle and the eye Control of heart beat</p>	<p>Topic 8: Control of gene expression: Alteration of DNA bases can alter protein structure</p> <p>Most of cell's DNA is not translated</p> <p>Regulation of transcription and translation</p>	<p>Types of mutations during replication.</p> <p>Stem cells to specialised cells as less translation occurs.</p> <p>Epigenetics, siRNA.</p>	<p>Mock</p> <p>Past paper questions</p>

			Gene expression and cancer	Tumours relating to methylation of oncogenes and tumour suppressor genes, Role of oestrogen in breast cancer.	
Year 13 Spring 2	Nervous Coordination and Muscles: Homeostasis:	Structure of muscle Muscle contraction Feedback Blood glucose and diabetes Kidneys and osmoregulation	Using genome projects Recombinant DNA technology Identifying and treating heritable conditions Genetic fingerprinting	Sequencing, now automated, Simpler organism genomes allow other more complex projects eg: antigens for vaccine production, Non-coding and regulatory DNA hinders translation of the proteome. Transgenic organisms, cDNA, use of restriction enzymes, Amplification of fragments by host or PCR. Using DNA hybridisation and labelled probes for screening, genetic counselling, location of specific alleles, and personalised medicine. Analysis of DNA fragmented by splicing at VNTR, cloned by PCR, and interpreted after gel	Past paper questions Muscle slide preparation Past paper questions

				electrophoresis, with applications.	
Year 13 Summer 1	Revision	Revision of topics from 2 years	Revision	Revision of topics from 2 years	<u>Synoptic Essays</u> Paper 3 exam
Year 13 Summer 2					