CURIOSITY COMPASSION COURAGE

Academic Outline 2024-25

Subject: A level Biology (AQA)

	Term 1 Aug-Oct	Term 2 Nov-Dec	Term 3 Jan-Feb	Term 4 Mar-Apr	Term 5 Apr-May	Term 6 Jun-Jul
Year 12:	**Unit 1. Biological Molecules.** A: Biological molecules • Molecules of life • Sugars • Polysaccharides • Lipids • Proteins • Enzymes • Factors affecting enzyme activity • Enzyme controlled reactions B: More Biological Molecules • DNA and RNA • DNA Replication • ATP • Water • Inorganic Ions	**Unit 2. Cells** A: Cell Structure and Division • Eukaryotic cells and Organelles • Prokaryotic cells and Organelles • Analysis of cell components • Cell division – mitosis • Investigating mitosis B: Cell Membranes • Cell membranes • Diffusion • Osmosis • Active transport C: Cells and the Immune System • Antigens • The immune response • Immunity and vaccines • Antigenic variation	Completion of unit 2 **Unit 3. Organisms exchange substances with their environment.** A: Exchange and Transport Systems • Size and surface area • Gas exchange in humans • Effects of lung disease • Gas exchange systems B: More Exchange and Transport Systems • Digestion and Absorption • Haemoglobin • The circulatory system • The heart • Cardiovascular disease • Xylems • Phloems	Completion of unit 3 Unit 4. Genetic information, variation and relationships between organisms. A: DNA, RNA and Protein Synthesis • DNA • Genes and chromosomes • RNA and protein synthesis • Transcription and translation • The genetic code and nucleic acids B: Diversity and Selection • Meiosis and genetic variation • Mutations • Genetic diversity • Natural selection • The effects of selection • Investigating selection	Completion of unit 4 C: Diversity and Classification • Classification of organisms • Courtship behaviour • DNA or protein classification • Using gene technologies to assess genetic diversity • Investigating variation • Biodiversity • Agriculture and biodiversity Reteach of QLA areas unit 1-unit 4. Required practical workshops	Progression PPE's and reteach from PPE's Topic 5: Energy transfers in and between organisms A: Photosynthesis and Respiration • Photosynthesis, respiration and energy • Light dependent reaction • Light independent reaction • Limiting factors in photosynthesis

		• Antibodies in medicine • HIV and viruses				
Year 13	Topic 5: Energy transfers in and between organisms A: Photosynthesis and Respiration • Photosynthesis, respiration and energy • Light dependent reaction • Light independent reaction • Limiting factors in photosynthesis • Aerobic and anaerobic respiration • Mitochondrial reactions	Topic 6: Responding to changes in environment A: Stimuli and Responses • Survival and response • Nervous communication • Responses in plants • Receptors • Control of heart rate B: Nervous Coordination • Neurones • Synaptic transmission • Muscle structure	Topic 7: Genetics, populations, evolution and ecosystems A: Genetics • Genetic terms • Monohybrid crosses • Multiple allele and dihybrid crosses • Linkage • Epistasis • Chi squared test B: Populations and evolution • The hardy Weinberg principle	Topic 8: Control of gene expression A: Mutations and Gene expression • Mutations • Mutagenic agents • Cancer • Stem cells • Regulation of transcription and translation • Epigenetics B: Genome projects and gene technologies • Genome projects • Making DNA fragments	Exam preparation	A level Exams

CURIOSITY COMPASSION COURAGE

	B: Energy transfers and nutrient cycles • Energy transfer in ecosystems • Farming practices and production • Nutrient cycles in natural ecosystems • Fertilisers and eutrophication	• Muscle contraction C: Homeostasis • Homeostasis • Control of blood glucose concentration • Diabetes • The kidneys • Controlling blood water potential	• Variation and selection • Speciation and genetic drift C: Populations in ecosystems • Ecosystems • Variation in population size • Investigating populations • Succession • Conservation	• Amplifying DNA fragments • Recombinant DNA technology • Gene therapy • Gene probes and medical diagnosis • Genetic fingerprinting		