



Queen Elizabeth's Girls' School

Educating Women of the Future

Biology Key Stage 5 Curriculum 2022/23

	Topic/Big Question	Focus
Year 12	Basic components of living things	Students will learn about Microscopy, Prokaryotic and Eukaryotic cells.
	Biological molecules	Students will learn about Biological elements, water, carbohydrates, proteins and protein synthesis, lipids, nucleic acids, ATP.
	Enzymes	Students will learn about Enzyme action, inhibitors, cofactors, coenzymes and prosthetic groups.
	Plasma membranes	Students will learn about Structure and function of plasma membranes, diffusion, osmosis, active transport.
	Cell division	Students will learn about the Cell cycle, mitosis, meiosis, specialisation, stem cells.
	Exchange surfaces and breathing	Students will learn about specialised exchange surfaces in mammals, fish and insects, structure and function of lungs.
	Transport in animals	Students will learn about The blood, blood vessels and the heart.
	Transport in plants	Students will learn about Water transport in plants, transpiration, translocation.
	Classification and evolution	Students will learn about Classification, 5 kingdoms, phylogeny, evidence for evolution, variation, adaptations, population characteristics.
	Biodiversity	Students will learn about Biodiversity, calculating biodiversity, genetic biodiversity, maintaining biodiversity, sampling techniques.
	Communicable diseases	Students will learn about Pathogens, plant and animal diseases, transmission of communicable diseases, plant defences, non-specific animal defences, immune system, preventing and treating disease.
	Hormonal communication	Students will learn about Structure and function of pancreas, regulation of blood glucose, diabetes and it's control, coordinated responses, controlling heart rate.

	Topic/Big Question	Focus
Year 13	Neuronal communication	Students will learn about Coordination, neurons, sensory receptors, nervous transmission, structure and function of the brain, organisation of the nervous system, reflexes, voluntary and involuntary muscles, sliding filament model.
	Homeostasis	Students will learn about Thermoregulation in ectotherms and endotherms, excretion, structure and function of liver and kidneys, urine diagnosis, kidney failure.
	Plant responses	Students will learn about Plant hormones, growth responses, plant responses to herbivory and stress, tropisms in plants, commercial use of plant hormones.
	Energy for biological processes	Students will learn about Energy cycles, ATP synthesis and photosynthesis.
	Respiration	Students will learn about Glycolysis, Link reaction, Krebs's cycle, oxidative phosphorylation and respiratory substrates.
	Genetics of living systems	Students will learn about Mutations, variation, control of gene expression and body plans.
	Patterns of inheritance and variation	Students will learn about Variation and inheritance, monogenic inheritance, dihybrid inheritance, phenotypic ratios, evolution, speciation and artificial selection.
	Manipulating genomes	Students will learn about DNA profiling, sequencing and analysis, genetic engineering, gene technology and ethics.
	Cloning and biotechnology	Students will learn about Natural and artificial cloning in plants, cloning in animals, microorganisms and biotechnology, culturing microorganisms in the laboratory and industry, using immobilised enzymes.
	Ecosystems	Students will learn about Biomass, energy transfer through an ecosystem, recycling within ecosystem, succession, measuring distribution and abundance.
	Populations and sustainability	Students will learn about Population size, competition, predator-prey relationships, conservation and preservation, sustainability and ecosystem management.