

Year 10 Science

	<u>Topic</u>	<u>Key concept – what do I want the students to learn from this unit?</u>	<u>What knowledge will they acquire?</u>
YEAR 10 OVERVIEW			
Y10 - half term 1	Infectious diseases (including plants)	Communicable diseases	<ul style="list-style-type: none"> • Communicable infectious diseases • Viral diseases • Bacterial diseases • Fungal diseases • Protist diseases • Human defences systems • Vaccinations • Antibiotics and painkillers • Discovery and development of drugs
	Chemical Changes	Reactivity of metals. Reactions of acids. Electrolysis.	<ul style="list-style-type: none"> • Meta oxides • The reactivity series • Extraction of metals and reduction • Reactions of acids with metals • Neutralisation of acids and salt production • Soluble salts • The pH scale and neutralisation • The process of electrolysis • Electrolysis of molten ionic compounds • Using electrolysis to extract metals • Electrolysis of aqueous solutions
	Particle mode of matter	Internal energy and energy transfers Particle model and pressure	<ul style="list-style-type: none"> • Internal energy • Temperature change in a system and specific heat capacity • Changes of heat and specific latent heat • Particle model in gases

	<u>Topic</u>	<u>Key concept – what do I want the students to learn from this unit?</u>	<u>What knowledge will they acquire?</u>
Y10 – half term 2	Respiration and Photosynthesis	Photosynthesis Respiration	<ul style="list-style-type: none"> • Photosynthesis reaction • Rate of photosynthesis • Uses of glucose from photosynthesis • Aerobic and anaerobic respiration • Response to exercise • Metabolism
	Energy Changes	Exothermic and endothermic reactions	<ul style="list-style-type: none"> • Energy transfer during Exothermic and Endothermic reactions • Reaction profiles
	Atomic structure	Atoms and Isotopes	<ul style="list-style-type: none"> • The structure of an atom • Mass number, atomic number and isotopes • The development of the model of the atom • Atoms and nuclear radiation • Nuclear equations • Half-lives and the random nature of radioactive decay • Radioactive contamination
Y10 – half term 3	Homeostasis And response	Homeostasis The human nervous system Human coordination in humans	<ul style="list-style-type: none"> • Human endocrine system • Control of blood glucose concentration
	The rate and extent of chemical change	Rate of reactions. Reversible reactions and dynamic equilibrium.	<ul style="list-style-type: none"> • Calculating rates of reaction. • Factors which affect the rates of chemical reactions. • Collision theory and activation energy • Catalysts • Reversible reactions • Energy changes and reversible reactions • Equilibrium

	<u>Topic</u>	<u>Key concept – what do I want the students to learn from this unit?</u>	<u>What knowledge will they acquire?</u>
	Forces	Forces and their interactions	<ul style="list-style-type: none"> • Scalar and vector quantities • Contact and non-contact forces • Gravity • Resultant forces • Work done and energy transfer • Forces and elasticity
Y10 – half term 4	Homeostasis	Reproductive hormones	<ul style="list-style-type: none"> • Hormones in human reproduction • Contraception
	Organic Chemistry	Carbon compounds as fuels and feedstock.	<ul style="list-style-type: none"> • Crude oil, hydrocarbons and alkanes • Fractional distillation and petrochemicals • Properties of hydrocarbons • Cracking and alkanes • Structure and formula of alkenes • Reactions of alkenes • Alcohols • Carboxylic acids • Additional polymerisation • DNA and other naturally occurring polymers
	Forces	Forces and motion Forces, Accelerations and Newton's Law of motion Forces and braking	<ul style="list-style-type: none"> • Describing a motion along a line • Speed • Velocity • The distance-time relationship • Acceleration • Newton's First Law • Newton's Second Law • Newton's Third Law • Stopping distance • Reaction time • Factors affecting braking distance

	<u>Topic</u>	<u>Key concept – what do I want the students to learn from this unit?</u>	<u>What knowledge will they acquire?</u>
Y10 – half term 5	Genetics	Reproduction	<ul style="list-style-type: none"> • Sexual and asexual reproduction • Meiosis • DNA and genome • Genetic inheritance • Inherited disorders • Sex discrimination
	Chemical Analysis	Purity formulations and chromatography. Identification of common gases.	<ul style="list-style-type: none"> • Pure substances • Formulations • Chromatography • Test for hydrogen • Test for oxygen • Test for carbon dioxide • Test for chlorine • Flame tests • Metal hydroxides • Carbonates • Halides • Sulfates • Instrumental methods • Flame emission spectroscopy
	Waves	Waves in air , fluid and solids	<ul style="list-style-type: none"> • Transverse and longitudinal waves

	<u>Topic</u>	<u>Key concept – what do I want the students to learn from this unit?</u>	<u>What knowledge will they acquire?</u>
Y10 – half term 6	Variety and Evolution	Variation and Evolution	<ul style="list-style-type: none"> • Variation • Evolution • Selective breeding • Genetic Engineering • Evidence of Evolution • Fossils • Extinction • Resistant bacteria • Classification of living organisms •
	Chemistry of the Atmosphere	<p>The composition and evolution of the earth's atmosphere.</p> <p>Carbon Dioxide and methane as greenhouse gases.</p> <p>Common atmospheric pollutants and their sources.</p>	<ul style="list-style-type: none"> • The proportions of different gases in the atmosphere. • The Earth's early atmosphere. • How oxygen increased • How carbon dioxide decreased • Greenhouse gases • Human activities which contribute to an increase in greenhouse gases in the atmosphere • Global climate change • The carbon footprint and its reduction • Atmospheric pollutants from fuels • Properties and effects of atmospheric pollutants
	Waves	Waves in air , fluid and solids	<ul style="list-style-type: none"> • Properties of waves