

Year 10 Combined Science	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge	<p>Biology: Cells and Transport</p> <ul style="list-style-type: none"> Animal and plant Cells Specialised cells Cell differentiation Microscopy Chromosomes Mitosis and cell cycle Stem cells Diffusion Osmosis Active transport <p>Chemistry: Atoms and Periodic Table</p> <ul style="list-style-type: none"> Atoms elements and compounds mixtures Model of atom develop Subatomic particles RAM Electronic structure Periodic Table Development of PT Metals and non-metals Group 0, 1 and 7 	<p>Physics: Energy Stores and Transfers</p> <ul style="list-style-type: none"> Energy stores and systems Changes n energy Changes in systems Power Energy transfer Efficiency Global energy resources <p>Biology: Organisation and Mass Transport</p> <ul style="list-style-type: none"> Organisation Human digestive system Food tests Heart and Blood Coronary heart disease Health issues Effects of lifestyle Cancer Plant tissues Plant organ systems 	<p>Chemistry: Bonding and structure</p> <ul style="list-style-type: none"> Ionic bonding Covalent bonding Metallic bonding Properties of ionic compounds Polymers Giant covalent structures Properties of metal and alloys Carbon: diamond, graphite, graphene and fullerene <p>Physics: Electricity</p> <ul style="list-style-type: none"> Electricity symbols Charge and current VIR Resistors Circuits AC/DC Mains and the plug Electrical power Appliances National grid 	<p>Chemistry: Chemical changes</p> <ul style="list-style-type: none"> Metal oxides Reactivity series Extraction of metals Reactions of acids Neutralisation Soluble salts pH scales Strong and weak acids Electrolysis Molten ionic compounds Extract metals Aqueous solutions Half equations <p>Biology: Communicable Disease</p> <ul style="list-style-type: none"> Viral Bacterial Fungal Protest Human defence system Vaccination Antibiotics and painkillers Discovery and development of drugs 	<p>Physics: Particle theory</p> <ul style="list-style-type: none"> Density Change of state Internal energy Specific Heat Capacity Latent Heat Particle motion in gases <p>Biology: Bioenergetics</p> <ul style="list-style-type: none"> Photosynthetic reactions Rates of photosynthesis Uses of glucose Aerobic and anaerobic respiration Response to exercise Metabolism 	<p>Chemistry: Energy Changes</p> <ul style="list-style-type: none"> Exothermic and endothermic Reaction profiles energy change of reactions Conservation of mass RFM mass change Chemical measurement Concentration of solutions <p>Higher only:</p> <ul style="list-style-type: none"> Moles Amount of substance in equations Using moles Limiting reactants <p>Physics: Radioactivity</p> <ul style="list-style-type: none"> Structure of atom Mass number, atomic number isotopes Model of atom – covered in chem Atoms and nuclear radiation Nuclear equations Half lives Contamination
	Working Scientifically Skills	<ul style="list-style-type: none"> Use of appropriate apparatus, techniques and magnification, including microscopes to make observations. Use of appropriate apparatus and techniques for the observation and measurement of biological changes and/or processes Measurement of rate of reaction by a variety of methods including an uptake of water 	<ul style="list-style-type: none"> Safe use of appropriate heating devices and techniques including the use of a bunsen burner and a water bath Use of appropriate apparatus to make and record a range of measurements accurately including mass, time, temperature Measurement of rates of reaction by a variety of methods including using colour change of an indicator 	<ul style="list-style-type: none"> Use appropriate apparatus to measure current and potential difference and to explore the characteristics of a variety of circuit elements Use circuit diagrams to construct and check series and parallel circuits including a variety of common circuit elements 	<ul style="list-style-type: none"> Safe use of appropriate heating devices and techniques including the use of a bunsen burner and water bath or electric heater Use of appropriate apparatus and techniques to draw, set up and use electrochemical cells for separation and production of elements and compounds 	<ul style="list-style-type: none"> Use appropriate apparatus to make and record a range of measurements accurately including length, mass and volume. Use of such measurements to determine densities of solid and liquid objects
Core Practical	<ul style="list-style-type: none"> Microscopes Osmosis 	<ul style="list-style-type: none"> Food tests Enzymes Specific Heat capacity 	<ul style="list-style-type: none"> Resistors / circuits IV characteristics 	<ul style="list-style-type: none"> Soluble salts Electrolysis 	<ul style="list-style-type: none"> Photosynthesis Density 	<ul style="list-style-type: none"> Energy changes
Independent Learning Link	Cell Biology Atomic Structure and Periodic Table	Organisation Energy	Bonding and Matter Electricity	Infection and response Quantitative Chemistry Chemical changes	Particle Model of Matter Photosynthesis and Respiration	Energy changes Atomic Structure

Year 11 Combined Science	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge	<p>Biology: Homeostasis and response</p> <ul style="list-style-type: none"> • Homeostasis • Human nervous system • Hormonal coordination • Control of blood sugars • Hormones in reproduction • Contraception • Infertility • Negative feedback <p>Chemistry: Rates of reaction</p> <ul style="list-style-type: none"> • Calculate rates of reaction factors • Collision theory • Catalysts • Reversible reactions • Equilibrium <p>Chemistry: Organic chemistry</p> <ul style="list-style-type: none"> • Crude oil, hydrocarbons and alkanes • Fractional distillation • Properties of hydrocarbons • Cracking 	<p>Physics: Forces and Motion</p> <ul style="list-style-type: none"> • Scalar and vector • Contact and noncontact • Gravity • Resultant forces • Work done and energy transfer • Elasticity and forces • Speed • Velocity acceleration • Newton's laws • Forces and braking • Momentum <p>Biology: Inheritance, variation and evolution</p> <ul style="list-style-type: none"> • Sexual and asexual reproduction meiosis • DNA and the genome • Genetic inheritance • Inherited disorders • Sex determination 	<p>Biology: Inheritance, Variation and evolution</p> <ul style="list-style-type: none"> • Evolution • Selective breeding • Genetic engineering • Evidence of evolution • Fossils • Extinction • Resistant bacteria • Classification of living organisms <p>Chemistry: Purity</p> <ul style="list-style-type: none"> • Pure substances • Formulations • Chromatography • Identification of common gases <p>Physics: Waves</p> <ul style="list-style-type: none"> • Transverse and longitudinal properties • EM waves • Uses and application 	<p>Biology: Ecology</p> <ul style="list-style-type: none"> • Communities • Abiotic factors • Biotic factors • Adaptations • Biodiversity • Waste management • Land use • Deforestation • Global warming • Maintaining biodiversity <p>Chemistry: Sustainability</p> <ul style="list-style-type: none"> • Earths early atmosphere • Greenhouse gases • Human activity • Global climate change • Carbon footprint • Pollutants • Effects of pollutants • Potable water • Waste water • Alternatives to extraction • LCA • Recycling 	<p>Physics: Electromagnets</p> <ul style="list-style-type: none"> • Magnets • Poles and fields • Motor effect • Flemings Left Hand Rule • Electric motors 	
Working Scientifically Skills	<ul style="list-style-type: none"> • use of appropriate apparatus to make and record a range of measurements accurately including length, mass , time , temperature and volumes • safe and ethical use of a living organisms (plants or animals) to measure physiological functions and responses to the environment 	<ul style="list-style-type: none"> • use appropriate apparatus to measure and observe the effect of forces including the extension of springs • use appropriate apparatus and techniques to measure motion, including determination of speed and rate of change of speed (acceleration/deceleration) 	<ul style="list-style-type: none"> • safe use of a range of equipment to purify and/or separate chemical mixtures including chromatography 	<ul style="list-style-type: none"> • use of appropriate apparatus to make and record a range of measurements accurately including length and area • safe use of appropriate heating devices and techniques including use of a Bunsen burner and a water bath or electric heater • use of appropriate apparatus and techniques for the measurement of pH in different situations 		
Core Practical	<p>Reaction time</p> <p>Rates of reaction</p>	<ul style="list-style-type: none"> • Force and extension • Mass and Acceleration 	<ul style="list-style-type: none"> • Chromatography • Waves in solids and liquids • IR radiation 	<p>Distribution of species</p> <p>Water purification</p>		
Independent Learning Link	<p>Homeostasis</p> <p>Rates of Reactions</p> <p>Organic Chemistry</p>	<p>Forces</p> <p>Inheritance, variation and evolution</p>	<p>Chemical Analysis</p> <p>Wave properties</p>	<p>Ecology</p> <p>The Atmosphere</p>	<p>Magnetism</p>	