Year 10 Combined Science	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge	**Chemistry: Atomic Structure Recap of Y7/8** **Chemistry: Structure and bonding** • Particle model • Ions • Ionic bonding • Covalent Bonding • Metallic bonding and structures **Biology: Non- communicable diseases** • Cancer • Smoking • Diet, Exercise and diseases • Alcohol **Biology: Preventing and treating diseases** • Review non communicable diseases • Vaccinations • Antibiotics and painkillers • Drug discovery and development **Physics: Electricity in the home** • Alternating current • Cables and plugs • Electrical power and PD • Electrical currents and energy transfer • Appliances	**Chemistry: Chemical calculations – the basics** • Basics of conservation of mass • RFM • Concentration **Chemistry: Chemical changes** • Oxidation and Reactivity Series • Displacement • Extracting metals x2 • HT Oxidation and reduction **Physics: Radioactivity** • Review radioactivity basics • Changes in nucleus • Alpha, beta and gamma • Half lives **Biology: Photosynthesis** • Photosynthesis basics • Photosynthesis factors • HT Photosynthesis limiting factors • RP5 Photosynthesis and light intensity x2 **Biology: Respiration** • Aerobic Respiration • Exercise • Anaerobic respiration • Metabolism of the liver and oxygen debt	**Chemistry: Calculations Advanced** • Review Conservation of mass basics • Moles • Amount of substances • Limiting reactants **Biology: The human nervous system** • Nervous system • RP reaction time • Reflex • Synapse **Biology: Hormonal coordination** • Human Endocrine system • Blood glucose • Diabetes • Human reproduction • Menstrual cycle • Contraception • Infertility treatments • Negative feedback	**Physics: Wave properties** • Wave basics • Reflection and refraction • RP Waves **Physics: Electromagnetic waves** • EM spectrum • RP Infrared • Communication • UV, Xray, Gamma	**Biology: Cell structure (recap)** • Cells • Microscopes • Diffusion, Osmosis and Active transport **Biology: Cell division** • Mitosis, cell division • Differentiation • Stem cells **Biology: Reproduction** • Types • Cell division and reproduction • DNA and genome basics • Inherited disorders • Family trees, punnet squares • Screening **Chemistry: Chemical changes** • Acids and metals (Zn, Fe and Mg with HCl + H2SO4) • Neutralisation and salt production x2 • Soluble salts • RP8 Making a soluble salt x2 HT Strong and weak acids	**Chemistry: Structure and bonding** • States of matter • Ions • Properties of ionic compounds • Properties of covalent compounds • Giant and simple structures • Properties of metallic compounds **Chemistry: Electrolysis** • Recap Reactivity series • Electrolysis • Molten ionic compounds • Extract metals • Aqueous solutions • RP Electrolysis • Half equations **Physics: Electromagnets** • Magnets • Poles and fields • Motor effect • Flemings Left Hand Rule • Electric motors **Chemistry: Energy Changes** • Exothermic and endothermic reactions • RP10 Temperature change x2 • Reaction Profiles x2 • HT Bond energy calculations
Working Scientifically Skills	• 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	• Measurement of rate of reaction by a variety of methods including an uptake of water Use of appropriate apparatus, techniques and magnification, including microscopes to make observations. • Measurement of rates of reaction by a variety of methods including using number of bubbles as an indicator	• Use of appropriate apparatus to make and record a range of measurements accurately including mass, time, temperature	• 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	• Safe use of appropriate heating devices and techniques including the use of a Bunsen burner and a water bath • Use of appropriate apparatus and techniques for the observation and measurement of biological changes and/or processes	• Safe and careful handling of gases, liquids and solids, including careful mixing of reagents under controlled conditions, using appropriate apparatus to explore chemical changes and/or products • Use of appropriate apparatus and techniques to draw, set up and use electrochemical cells for separation and production of elements and compounds

Core Practical		• Photosynthesis	• Reaction Time	• Waves	• Making a soluble salt	• Electrolysis • Temperature change
Independent Learning Link	Atomic Structure and Periodic Table Bonding and Matter Non – communicable diseases Infection and response	Particle Model of Matter Chemical changes Radioactivity Photosynthesis Respiration	Quantitative Chemistry Nervous system Hormonal Coordination	Waves Electromagnetic waves	Cell division Reproduction Chemical changes	Bonding and Matter Electrolysis Energy changes

Year 11 Combined Science	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge	**Biology: Photosynthesis** • Photosynthesis basics • Photosynthesis factors • HT Photosynthesis limiting factors • RP5 Photosynthesis and light intensity x2 **Biology: Respiration** • Aerobic Respiration • Exercise • Anaerobic respiration • Metabolism of the liver and oxygen debt **Physics: Radioactivity Advanced** • Review radioactivity basics • Changes in nucleus • Alpha, beta and gamma • Half lives **Chemistry: Calculations Advanced** • Review Conservation of mass basics • Moles • Amount of substances • Limiting reactants	**Biology: Genetics and Evolution** • Extinction • Fossils • Classification **Physics: Electricity in the home** • Alternating current • Cables and plugs • Electrical power and PD • Electrical currents and energy transfer • Appliances **Chemistry: Energy Changes** • Exothermic and endothermic reactions • RP10 Temperature change x2 • Reaction Profiles x2 • HT Bond energy calculations **Physics: Forces** • Extension of a spring • Momentum	**Chemistry: Analysis** • Pure substances and mixtures • Chromatography • RP Chromatography • Identifying gasses **Biology: Adaptations, interdependence and competition** • Communities, Biotic and Abiotic • Competition • Animal Adaptations • Plant adaptations **Biology: Biodiversity and ecosystems** • Pollution and global warming • Deforestation and land use • Maintaining biodiversity	**Physics: Forces and motion** • Acceleration • Weight and TV • Braking and momentum • Elasticity **Physics: Motion** • Speed and DT graphs • Velocity time graphs **Chemistry: Rates of reaction** • Calculate rates of reaction factors • Collison theory • Catalysts • Reversible reactions • Equilibrium **Chemistry: Rates of reaction** • Calculate rates of reaction factors • Collison theory • Catalysts • Reversible reactions • Equilibrium **Physics: Electromagnets** • Magnets • Poles and fields • Motor effect • Flemings Left Hand Rule Electric motors	**Physics: Forces in the balance** • Vectors and scales • Forces between objects • Resultant forces • Centre of mass • Parallelogram of forces • Resolution of forces	
Working Scientifically Skills	• use appropriate apparatus and techniques to measure motion, including determination of speed and rate of change of speed (acceleration/deceleration)	• 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	• safe use of appropriate chemicals and techniques including reading specific scientific equipment to take accurate measurements.		
Core Practical	• Making soluble salts • Photosynthesis • Conservation of Mass	• Temperature change	• Chromatography • Ecology	• Acceleration • Rates of reaction		
Independent Learning Link	Chemical Changes Photosynthesis Respiration Radioactivity Quantitative Chemistry	Genetics and Evolution Electricity Energy changes Biodiversity	Forces Chemical changes Adaptations, interdependence and competition Organisation of an Ecosystem	Motion Rates of Reactions Electromagnetic waves	Forces	