Year 10 Combined Science	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge	**Biology: Non-communicable diseases** • Review cells • Cancer • Smoking • Diet, Exercise and diseases • Alcohol **Biology: Communicable Disease** • Viral • Bacterial • Fungal • Protest • Human defence system • Vaccination • Antibiotics and painkillers • Discovery and development of drugs **Chemistry: Atoms and Periodic Table** • Atoms elements and compounds mixtures review • Electronic structure • Periodic Table • Development of PT • Metals and non-metals • Group 0, 1 and 7 **Physics: Conservation and dissipation of energy** • Energy and work • GPE • Kinetic and elastic energy • Dissipation and efficiency • Electrical appliances • Energy and power	**Physics: Electricity in the home** • Alternating current • Cables and plugs • Electrical power and PD • Electrical currents and energy transfer • Appliances **Chemistry: The Earths resources** • Potable water and treating wastewater • RP Purification of water • Extracting metals • Life cycle assessment • Reducing the use of resources **Chemistry: Analysis** • Pure substances and mixtures • Chromatography • RP Chromatography • Identifying gasses **Biology: Preventing and treating diseases** • Vaccinations • Antibiotics and painkillers • Drug discovery and development **Biology: The human nervous system** • Nervous system • RP reaction time • Reflex • Synapse	**Physics: Particle theory** • Density • Change of state • Internal energy • Specific Heat Capacity • Latent Heat • Particle motion in gases **Physics: Radioactivity** • Structure of atom • Mass number, atomic number isotopes • Model of atom – covered in chem • Atoms and nuclear radiation **Physics: Energy transfer by heating** • Conduction • SHC • RP SHC • Heating and insulation **Chemistry: Crude oil and fuels** • Crude oil and hydrocarbons • Fractional distillation • Properties of hydrocarbons • Cracking and alkenes **Chemistry: Calculations basics** • Conservation of mass basics • RFM • Concentration	**Chemistry: Bonding and structure** • Particle model • States of matter • 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 **Biology: Hormonal coordination** • Human Endocrine system • Blood glucose • Diabetes • Human reproduction • Menstrual cycle • Contraception • Infertility treatments • Negative feedback	**Biology: Cell division** • Mitosis, cell division • Differentiation • Stem cells **Physics: Electromagnetic waves** • EM spectrum • RP Infrared • Communication • UV, Xray, Gamma **Physics: Electricity** • Electricity symbols • Charge and current • VIR • Resistors +RP • RP Resistance • Components • RP Components • Series circuits • Parallel circuits **Chemistry: Electrolysis** • Recap Reactivity series • Electrolysis • Molten ionic compounds • Extract metals • Aqueous solutions • RP Electrolysis • Half equations	**Biology: Reproduction** • Types • Cell division and reproduction • DNA and genome basics • Inherited disorders • Family trees, punnet squares • Screening **Biology: Variation and natural selection** • Variation • Natural selection • Antibiotic resistance • Selective breeding • Genetic engineering • GE ethics **Physics: Forces in the balance** • Vectors and scales • Forces between objects • Resultant forces • Centre of mass • Parallelogram of forces • Resolution of forces **Biology: Genetics and Evolution** • Extinction • Fossils • Classification
Working Scientifically Skills	• 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	• 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	• 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	• 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	• 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 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

	• Measurement of rate of reaction by a variety of methods including an uptake of water	including using colour change of an indicator				
Core Practical		• Purification of water • Chromatography • Reaction time	• SHC • Fractional distillation		• Infrared • Resistance • Components • Electrolysis	
Independent Learning Link	Non- communicable diseases Communicable diseases Atomic Structure and Periodic Table Energy	Electricity Earth's Resources Chemical changes Infection and response Nervous system	Particle Model of Matter Radioactivity Energy changes Quantitative Chemistry	Bonding and Matter Hormonal Coordination	Cell division Electromagnetic waves Electricity Electrolysis	Reproduction Variation Forces Genetics

Year 11 Combined Science	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge	**Biology: Genetics and Evolution** • Extinction • Fossils • Classification **Chemistry: Chemical changes** • Oxidation and Reactivity Series • Displacement • Extracting metals x2 • HT Oxidation and reduction • 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 **Biology: Photosynthesis** • Photosynthesis basics • Photosynthesis factors • HT Photosynthesis limiting factors • RP5 Photosynthesis and light intensity x2 **Physics: Motion** • Speed and DT graphs • Velocity time graphs	**Physics: Forces in the balance** • Vectors and scales • Forces between objects • Resultant forces • Centre of mass • Parallelogram of forces • Resolution of forces **Chemistry: Energy Changes** • Exothermic and endothermic reactions • RP10 Temperature change x2 • Reaction Profiles x2 • HT Bond energy calculations **Biology: Respiration** • Aerobic Respiration • Exercise • Anaerobic respiration • Metabolism of the liver and oxygen debt **Biology: Adaptations, interdependence and competition** • Communities, Biotic and Abiotic • Competition • Animal Adaptations • Plant adaptations	**Chemistry: Rates of reaction** • Calculate rates of reaction factors • Collison theory • Catalysts • Reversible reactions • Equilibrium **Chemistry: Calculations** • Review Conservation of mass basics • Moles • Amount of substances • Limiting reactants **Physics: Forces and motion** • Acceleration • Weight and TV • Braking and momentum • Elasticity	**Physics: Radioactivity Advanced** • Review radioactivity basics • Changes in nucleus • Alpha, beta and gamma **Physics: Electromagnets** • Magnets • Poles and fields • Motor effect • Flemings Left Hand Rule Electric motors **Biology: Organising an ecosystem** • Levels of organisations • RP7 Ecology x2 • Cycling materials (carbon and water cycle) **Biology: Biodiversity and ecosystems** • Pollution and global warming • Deforestation and land use • Maintaining biodiversity	**Biology: Reproduction** • Types • Cell division and reproduction • DNA and genome basics • Inherited disorders • Family trees, punnet squares • Screening **Biology: Variation and natural selection** • Variation • Natural selection • Antibiotic resistance • Selective breeding • Genetic engineering • GE ethics	
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	• Temperature change	• Rates of reaction • Conservation of Mass • Acceleration	• Ecology		
Independent Learning Link	Genetics and Evolution Chemical Changes Photosynthesis Motion	Forces Energy changes Respiration Adaptations, interdependence and competition	Rates of Reactions Quantitative Chemistry Forces	Radioactivity Electromagnetic waves Organisation of an Ecosystem Biodiversity	Reproduction Variation and natural selection	