KS4 Separate Sciences curriculum overview 2025-2026

Year	HT 1	HT2	HT3	HT4	HT5	HT6
10	**Biology** **B1** **Transport across cells**	**Biology** **B2 Organisation- The digestive system**	**Biology** **B2 Organisation- Cardiovascular system, non communicable disease, Plants**	**Biology** **B3 Infection and response**	**Biology** **B4 Bioenergetics**	**Biology** **B7 Ecology**
	Animal and plant cells Types of microscope Microscopes Required Practical Eukaryotic/Prokaryotic Specialised cells Cell cycle Stem cells Aseptic technique Microbes RP Monoclonal antibodies Diffusion Diffusion adaptations Osmosis Osmosis Required Practical Active transport	Organisation Digestive system Food tests Required Practical Enzymes Enzymes Required Practical Blood and blood vessels	Heart Lungs Heart disease Non-communicable disease Cancer Plant organisation Plant transport Factors affecting plant transport	Communicable disease Preventing disease Virus/Bacteria Fungus/Malaria Specific immune system Vaccines Drug testing Plant disease Plant responses	Photosynthesis Factors affecting photosynthesis Photosynthesis RP Uses of glucose Inverse square law Aerobic respiration Anaerobic respiration Effect of exercise Metabolism	Sampling Quadrats Required Practical Transects Required Practical
	Chemistry **C2- Bonding, Structure and Properties**	**Chemistry** **C3 - Quantitative Chemistry**	**Chemistry** **C4 - Chemical Changes**	**Chemistry** **C4 - Chemical Changes**	**Chemistry** **C5 - Energy Changes**	**Chemistry** **C5 - Energy Changes**
	Ionic Compounds Ionic Bonding Properties of small molecules Covalent bonding Giant covalent structures Graphene and	Conservation of mass Balancing equations Mass changes in reactions Uncertainty Relative formula mass % Mass of an element Moles	Metal Oxides Reactivity series Displacement Redox Ionic equations Acid Base Reaction Observing Reaction Making a Salt	Strong & weak acids Applying acids, alkalis & pH Intro to Electrolysis Molten Electrolysis Aluminium Extraction Aqueous Electrolysis Electrolysis Required	Endo and Exothermic Energy Changes Neutralisation Energy Changes Metals	Reaction Profiles Apply Energy Change Reactions

	Fullerenes Polymers Properties of metals and alloys Metallic Bonding Three states of matter Applying States and bonding Transition - properties Transition - vs. Gp1 Nanoparticles Uses of nanoparticles	Reacting masses Limiting Reactant Using moles to balance equations Concentration of solutions Applying calculations Yield & Atom economy Conc of solution Gas volumes	Required Practical pH & neutralisation Titrations RP Titrations - calc Electrochemical cells Fuel cells	Practical Apply electrolysis Aqueous Electrolysis Half Equations		
	Physics **P1 Energy**	**Physics** **P1 Energy** **P2 Electricity**	**Physics** **P2 Electricity**	**Physics** **P3 Particle model**	**Physics** **P4 Atomic structure**	**Physics** **P5 Forces**
	Changes in energy stores Conservation of energy Work done GPE KE Efficiency Energy and power Thermal energy transfers Specific heat capacity Specific heat capacity	Thermal insulation Energy demands Non - renewable resources Renewable resources Current and charge Potential difference Resistance Resistance of a wire Static charge Electric fields	I-V component characteristics Series circuits Parallel circuits AC/DC Cables and plugs Power and p.d. Current, Energy transfers Fuses and Earthing Appliances and Efficiency	Density Density States of matter Changes of state Internal energy Specific latent heat Gas pressure Calculating pressure in gases Increasing pressure in gases	History of the atom Atomic structure and isotopes Types/properties of radiation Uses of radiation Decay equations Activity and half-life Background radiation Using isotopes Fission Fusion	Scalar and vector Displacement Forces Newton's 1st/3rd Law Resultant forces *Resolution of forces (Higher)* Centre of mass

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11	**Biology** **B5 Homeostasis and response**	**Biology** **B6 Inheritance and selection**	**Biology** **B6 Inheritance and selection**	**Biology** **B7 Ecology**	**Biology** **Revision and preparation for GCSE exam**	
	Homeostasis Nervous system Reflex arc Reaction time Required Practical Endocrine system Controlling glucose Diabetes Reproductive hormones Contraception IVF Negative feedback Brain Eye Thermoregulation Kidneys Dialysis Plant control Plant hormones Plant hormones RP	Sexual/Asexual reproduction Advantages disadvantages sexual reproduction Mitosis Meiosis DNA Inheritance Punnett squares Inherited disorders Variation Selective breeding DNA structure Cloning	Genetic engineering Evolution Fossils Resistant bacteria Extinction Theory of evolution Speciation Understanding genetics	Classification Community/Food webs Abiotic/Biotic factors Adaptations Carbon cycle Quadrats Biodiversity Conservation Climate Peat Deforestation Decay Decay RP Trophic levels Biomass Food security Farming Fisheries Biotechnology	Students will be retaught key knowledge identified as priority areas from assessments. Students will recover the required practicals for paper 1. There will be a focus on exam skills	
	Chemistry **C6 - Rate and Extent of Reactions**	**Chemistry** **C7 - Hydrocarbons**	**Chemistry** **C8 - Chemical Analysis** **C9 Earth and Atmosphere**	**Chemistry** **C10 - Using Resources**	**Chemistry** **Revision and preparation for GCSE exam**	
	Measuring & Calculating Rates of	Crude Oil and Hydrocarbons	Pure substances Formulations	Finite Resources Life Cycle	Students will be retaught key	

	Reaction Rate graphs and Tangents Collision Theory Colour Change required practical Using Volume required practical Catalysts Reversible Reactions Equilibrium Changing Concentration Equilibrium Changing Pressure, Changing Temperature, and Catalysts Applying Equilibrium	Properties of Hydrocarbons Fractional Distillation Combustion Cracking and Alkenes Alkenes Alcohols Carboxylic acids Addition polymers Condensation polymers Amino acids DNA	Chromatography Chromatography Testing for Gases Flame tests Identifying Hydroxides IdentifyingCarbonates IdentifyingHalides Identifying Sulfates Analysis RP Instrumental methods The Earth's Atmosphere Development of Earth's Atmosphere Greenhouse gases and Carbon footprint Climate Change and Pollutants	Assessments Importance of Recycling Phytomining and Bioleaching Water Safe to Drink Potable Water Water Treatment Corrosion Alloys Ceramics Haber process NPK	knowledge identified as priority areas from assessments. Students will recover the required practicals for paper 1. There will be a focus on exam skills.	
	Physics **P5 Forces and Motion**	**Physics** **P6 Waves**	**Physics** **P7** **Electromagnetism**	**Physics** **P8 Space Physics**	**Physics** **Revision and preparation for GCSE exam**	
	What is speed Distance-time Graphs Velocity and acceleration Velocity-time Graphs Force and acceleration Newton's 2nd Law Force and acceleration Weight and terminal velocity Forces and braking	Wave properties Required practical - Ripple tank and standing wave *Reflection and refraction (higher)* The Electromagnetic spectrum Non-ionising radiation Communications IR absorption and	Magnets Magnetic fields Solenoids and electromagnets *The motor effect (higher)* Loudspeakers Induced pd Using generator effect Microphones Transformers	Solar system Life cycle of a star Satellites Red shift	Students will be retaught key knowledge identified as priority areas from assessments. Students will recover the required practicals for paper 1 and paper 2 There will be a focus on exam skills.	

	Momentum (Higher) Force and Elasticity Moments, levers, gears Pressure in gases Atmospheric pressure Changes in momentum	emission RP Black bodies Ionising radiation X-rays in medicine Reflection of soundwaves Using sound waves Lenses Lenses RP Visible light				