



Curriculum Overview |

What will my child learn in Science

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 7	<u>Particle model</u> What are the building blocks of matter? Changing state of steric acid (Evidencing) <u>Separation techniques</u> <i>How do scientists carry out investigations?</i> Filtration (Planning) <u>Cells and organisation</u> <i>What are the building blocks of all matter?</i> Cheek & onion cells (Evaluating models/calculating)	<u>Atoms, elements and the periodic table</u> What are the building blocks of the universe? Conservation of Mass (Calculating) Model of the atom over time (Scientific development) <u>Forces</u> <i>What forces act in the universe?</i> Spring Extension (Concluding) <u>Nutrition and digestion</u> <i>How does our body use food?</i> Enzyme Activity (Concluding/ Analysing)	<u>Energy Stores and transfers</u> <i>How do energy changes occur?</i> Heating curve for water (Analysing/concluding)	<u>Microbes and disease</u> <i>What causes diseases?</i> Handwashing investigation (Planning) Ethics immunisation and vaccines (Scientific development)- <u>Reproduction</u> <i>How human babies are made?</i> Use of contraception (scientific development)	<u>Acids and alkalis</u> <i>How do reactions, and acids and alkalis affect us?</i> CaO & HCl neutralisation (Planning) <u>Magnetism</u> <i>How do invisible forces act?</i> Effecting the Strength Electromagnets (Conclusions) <u>Electrical circuits</u> <i>How do electrical devices work?</i> Resistance of a wire (Evaluating)	<u>Physical and chemical changes</u> Diffusion (Evidencing)

Year 8	<u>Types of chemical reaction</u> <i>How are compounds formed?</i> <i>How are reactions useful?</i> Investigating Exo and Endo reactions (Calculating, concluding) particles <u>Forces and motion</u> <i>How do forces act to produce movement?</i> Helicopter Investigation (Planning) forces	<u>Cellular respiration and gas exchange</u> <i>How do organisms get energy?</i> Investigating anaerobic respiration (Evaluating) Cells <u>Waves</u> <i>How do we use waves for communication?</i> Refraction in a Perspex block (Evidencing) Energy	<u>Evolution</u> <i>How do organisms evolve?</i> Bird Beak Investigation (Analysing/ Concluding) Development of theory of evolution (Scientific Development) Responding to change <u>Metals and reactivity</u> <i>How are metals useful?</i> Displacement & Reactivity (Evidencing) Particles/Bonding	<u>Earth and atmosphere</u> <i>How can we conserve the earth and atmosphere?</i> Carbon Dioxide & Global Warming (Analysing & scientific development) Responding to change/Particles	<u>Photosynthesis</u> <i>Why are plants so important for life on earth?</i> Limiting Factors in Elodea (Planning, Evaluating) Cells/Energy/Responding to change	<u>Relationships in ecosystems</u> <i>How do organisms depend on each other?</i> Quadrat Sampling (Calculating) Ethical implications of pesticides (Scientific development) Responding to change/Energy
Year 9	How science works. <i>Biology investigations.</i> <i>Chemistry investigations.</i> <i>Physics investigations</i>	<u>Key concepts chemistry:</u> Atomic structure and periodic table <u>States of Matter and Mixtures</u> Investigating inks Evaluating Calculating	<u>Key concepts biology</u> Microscopes Planning Enzymes and pH graphs Analysing/Concluding Osmosis Concluding Cells, responding to change <u>Cells and control</u> Evidencing <i>e.g. ruler drop reaction times</i> Cells	<u>Genetics</u> Planning DNA extraction Scientific development <i>e.g. ethics of human genome project or pedigree analysis</i> Cells <u>Key concepts chemistry:</u> Bonding (excluding calculations involving masses)	<u>Forces</u> CP Relationship mass, force, acceleration Planning, Concluding & Calculating Force <u>Energy</u> Calculating <i>e.g. Calculating efficiency of appliance</i> Scientific development <i>e.g methods of electricity generation</i> Energy	<u>Waves</u> CP Measuring wave properties Evaluating Energy



Curriculum Overview |

What will my child learn in Combined Science?

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10	<p><u>Key concepts. Cells and control.</u> Microscopic calculations Types of cell Bacteria Enzyme Action Transport including osmosis CP microscopes Planning CP Enzymes and pH Analysing/Concluding CP Osmosis Concluding</p> <p><u>Key concepts. States of matter, separating substances.</u> Properties of Ionic and Covalent compounds Molecular compounds Allotropes of carbon Properties of metals Bonding models CP investigating inks Evaluating Evaluating- e.g <i>Bonding models</i> Scientific development - e.g. bonding models evaluation and e.g. history of the atom revisit</p>	<p><u>Key concepts. Forces</u> Vectors and scalars Resultant forces Newton's laws Momentum Stopping distances</p> <p>CP Relationship mass, force, acceleration Planning, Concluding & Calculating</p> <p><u>Energy</u> Stored energies Calculating e.g. <i>Calculating efficiency of appliance</i> Scientific development <i>e.g methods of electricity generation</i></p>	<p><u>Genetics and natural selection.</u> The structure of DNA Variants and phenotypes Alleles and inheritance Planning DNA extraction Scientific development <i>e.g. ethics of human genome project or pedigree analysis</i></p> <p><u>Acids and alkalis</u> Preparation of a sulfate Reactions with carbonates Factors effecting rates of reaction CP Preparing Copper sulfate planning CP Neutralisation Evidencing</p>	<p><u>Waves and the electromagnetic spectrum</u> Wave speeds Core prac- Investigating waves And refraction EM dangers Using long/short wavelengths</p> <p><u>Health and disease</u> Non-communicable diseases Pathogens and The Immune Response Drugs <i>Analysing e.g trends in diseases over time</i> Scientific development <i>e.g ethics around clinical testing</i></p>	<p><u>Chemistry calculations.</u> Calculating <i>e.g. heating Mg ribbon empirical formula</i></p> <p><u>Radioactivity</u> Evaluating e.g. Modelling half-life investigation Scientific development <i>e.g. Development of the Bohr model</i></p> <p><u>Plant structures and their functions.</u> CP light intensity & photosynthesis Evaluating</p>	<p><u>Ecosystems</u> CP Quadrats and belt transects Planning & calculating</p> <p><u>Rates of reactions, groups in the periodic table.</u> Data Analysis & Evidencing- e.g <i>Halogen displacement</i></p> <p>CP Investigating reaction rates - Planning, writing methods, evidencing, evaluation, calculating-</p> <p>Forces and their effects.</p>

Year 11	<p><u>Electricity and circuits.</u> CP investigating resistance Planning</p> <p><u>Magnetism and the motor effect.</u></p> <p>Concluding –<i>e.g. making a motor</i></p>	<p><u>Fuels and earth science</u> Concluding Scientific development <i>e.g. ethics of using fossil fuels and their effect on the environment, changing ideas around global warming over time.</i></p> <p>Analysing- <i>e.g.Changes in the atmosphere over time.</i></p> <p><u>Exchange and transport</u> CP investigate the rate of respiration in living organisms - Planning & concluding</p>	<p><u>Particle model.</u> <u>Forces and matter.</u> Density Planning CP Specific heat capacity/ investigating water Evaluating</p> <p>CP Hooke's law/investigating springs - Analysing</p>	<p><u>Reteach</u></p> <p>Review of core practical Key concepts and past papers</p>	<p><u>Reteach</u></p>	<p><u>Reteach</u></p>
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Curriculum Overview |

What will my child learn in Triple Science Biology?

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10	Key concepts in Biology Microscopic calculations Types of cell Bacteria Enzyme Action Calorimetry Transport including osmosis CP microscopes Planning CP Enzymes and pH graphs Analysing/Concluding CP Osmosis Concluding	Cells and control Mitosis The nervous system Neurotransmission The eye The brain Brain scanning Evidencing e.g. ruler drop reaction times Cells	Genetics Meiosis DNA extraction Mutation and variation DNA transcription And translation Sex-linked disorders Planning DNA extraction Scientific development e.g. ethics of human genome project or pedigree analysis	Natural selection and Genetic modification Evidence for human evolution Darwin's theory Scientific development e.g. ethics of genetic engineering and selective breeding Start Health and Disease	Health, disease and Development of medicines Non-communicable diseases Pathogens and The Immune Response Drugs Plant diseases Monoclonal antibodies CP antibiotics - analysing Analysing- e.g. trends in diseases over time Scientific development e.g. ethics around clinical testing	Plant structures and Functions Absorbing water and mineral ions Transpiration and translocation Plant hormones CP light intensity & photosynthesis Evaluating
Year 11	Animal coordination, Control and Homeostasis Hormones Metabolic rate The menstrual cycle Glucose control and diabetes Thermoregulation Osmoregulation The kidney Analysing e.g. graphs of menstrual cycle/ blood glucose concentration Evaluation- e.g. uses of contraception	Exchange and transport In Animals Efficient exchange Heart and circulatory system Mocks and Revision Cellular respiration CP investigate the rate of respiration in living organisms - Planning & concluding	Ecosystems and materials Cycles Biotic and Abiotic factors Core prac- Quadrats and Transects Parasitism and mutualism Preserving biodiversity Carbon and nitrogen cycles Trophic levels Food security Indicator species CP Quadrats and belt transects Planning & calculating	Review of learning Review of core practical Key concepts and past papers	<u>Reteach</u>	<u>Reteach</u>



Curriculum Overview |

What will my child learn in Triple Science Chemistry?

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10	States of matter and Atomic structure Separating techniques CP investigating inks Evaluating	Bonding and types of Substances Properties of Ionic and Covalent compounds Molecular compounds Allotropes of carbon Properties of metals Bonding models <i>Evaluating- e.g Bonding models</i> <i>Scientific development - e.g. bonding models evaluation and e.g. history of the atom revisit</i> Acids and alkalis Different types of Indicator Bases and salts CP Preparing Copper sulfate <i>planning</i> CP Neutralisation <i>Evidencing</i>	Periodic table and Chemical calculations Masses and empirical formulae <i>Data Analysis & Evidencing- e.g Halogen displacement</i> Electrolysis and Metals Ores, Reactivity Oxidation and Reduction Life cycle assessments Dynamic Equilibrium CP Electrolysis Copper sulfate <i>- Concluding</i> <i>Evaluating -e.g Life cycle assessments</i> Quantitative analysis Atom economy Percentage yield and Theoretical yield Core prac- Titration	Transition metals Oxidation of metals Electroplating Alloys Chemical and fuel cells Hydrogen-oxygen fuel cells Evaluating fuels	Qualitative analysis Testing for ions CP Identifying ions- Conclusion <i>Evaluation – e.g. flame photometry vs. Flame test</i> Dynamic equilibria Haber process Predicating rate of Attainment	Fuels Fractional distillation Alkane homologous series Complete and incomplete Combustion Pollution Earth and atmospheric Science The Earth's early atmosphere Climate change <i>Concluding Scientific development e.g. ethics of using fossil fuels and their effect on the environment, changing ideas around global warming over time.</i> <i>Analysing- e.g.Changes in the atmosphere over time.</i>

Year 11	Groups in the periodic Table and rates of reactions Groups 1,7,0 and reactivity Activation energy Exothermic and endothermic CP Investigating reaction rates - Planning, writing methods, evidencing, evaluation, calculating-	Polymers and alcohols Polymerisation Addition polymerisation Problems with polymers Naturally occurring polymers Formulae of alcohols Carboxylic acids CP- combustion of alcohols Evaluation – <i>e.g. recycling polymers</i> bonding	Bulk surface Properties and Nanoparticles Sizes and properties Uses and risks	Review of learning Review of core practical Key concepts and past papers	<u>Reteach</u>	<u>Reteach</u>
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Curriculum Overview |

What will my child learn in Triple Science Physics?

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10	Motion and forces Acceleration Velocity/time graphs Momentum Stopping distances Calculations for breaking distances CP Relationship mass, force, acceleration Planning, Concluding & Calculating	Waves including Light And the EM spectrum Wave speeds And refraction EM dangers Using long/short wavelengths Calculating depth from wave velocity Transmission and absorption Ultra and infrasound And their uses CP Refraction Evidencing CP investigating radiation - Evidencing	Astronomy Changes in the solar System Steady state and big bang Red shift and other evidence Evolution of stars Telescopes	Radioactivity Types of radiation Half-life and decay Dangers of radioactivity Medical uses of radioactivity Nuclear power Fission and fusion Evaluating <i>e.g. Modelling half-life investigation</i> Scientific development <i>e.g. Development of the Bohr model</i>	Forces and matter Elastic and inelastic distortion Pressure in fluids Pascals Depth and density CP Hooke's law/investigating springs -Analysing	Static Electricity Common electrostatic Phenomena Uses and dangers Electric field including shape And direction
Year 11	Electricity and Circuits Transferring energy and power Electricity in the home CP investigating resistance Planning	Magnetism and the motor effect Magnets and magnetic fields Electromagnetic induction Transformers and energy Alternators and dynamos Turns ratio equation Concluding <i>—e.g. making a motor</i>	The Particle models Density Energy and changes in state Gas temperature and pressure Density Planning CP Specific heat capacity/ investigating water Evaluating	Review of learning Review of core practical Key concepts and past papers	<u>Reteach</u>	<u>Reteach</u>