

ASHTON COMMUNITY SCIENCE COLLEGE: SCIENCE CURRICULUM

Year 10						
	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
Knowledge	<p><u>Biology</u></p> <p>Organisation in the Body</p> <p><u>Chemistry</u></p> <p>The Three States of Matter</p> <p>Groups in the Periodic Table</p> <p><u>Physics</u></p> <p>Energy</p>	<p><u>Biology</u></p> <p>Respiration</p> <p><u>Chemistry</u></p> <p>Reactions of Acids and Making Salts</p> <p><u>Physics</u></p> <p>Energy</p>	<p><u>Biology</u></p> <p>Bioenergetics</p> <p><u>Chemistry</u></p> <p>Ionic Compounds</p> <p>Metals</p> <p><u>Physics</u></p> <p>Electricity</p>	<p><u>Biology</u></p> <p>Bioenergetics</p> <p><u>Chemistry</u></p> <p>Covalent Molecules</p> <p><u>Physics</u></p> <p>Electricity</p>	<p><u>Biology</u></p> <p>Nervous and Endocrine System</p> <p><u>Chemistry</u></p> <p>Rates of Reaction</p> <p><u>Physics</u></p> <p>Forces</p>	<p><u>Biology</u></p> <p>Homeostasis and Response</p> <p><u>Chemistry</u></p> <p>Chemical Energy (exothermic and endothermic)</p> <p>Reversible Reactions and Dynamic Equilibrium</p> <p><u>Physics</u></p> <p>Forces</p>
Skills/ application of knowledge	<p>Organisation in the Body: Heart, Blood, Blood Vessels, Treating Heart Disease, Lungs, Alveoli.</p> <p>The Three States of Matter: The Three States of Matter, Changing State, Heating Curve Graphs, Cooling Curve Graphs.</p> <p>Groups in the Periodic Table: Structure of the Periodic Table, Group 1 Metals, Group 7 Elements, Group 0 Elements.</p> <p>Energy: Conservation of Energy, $E_p = E_k$, Elastic Potential Energy, Efficiency, Work done, Specific Heat Capacity.</p>	<p>Respiration: Respiration, Respiration and Exercise, Anaerobic Respiration, Metabolism.</p> <p>The Three States of Matter: The Three States of Matter, Changing State, Heating Curve Graphs, Cooling Curve Graphs.</p> <p>Groups in the Periodic Table: Structure of the Periodic Table, Group 1 Metals, Group 7 Elements, Group 0 Elements.</p> <p>Energy: Power, Energy Resources.</p>	<p>Bioenergetics: Structure of a Leaf, Limiting Factors, Rate of Photosynthesis, Uses of Glucose, Osmosis, Transpiration, Plant Disease and Defences, Plant Hormones.</p> <p>Reactions of Acids and Making Salts: Neutralisation, Acid Reactions, Making a Salt, Titration, Concentration Calculations, The pH scale, Strong and Weak Acids, Redox Reactions.</p> <p>Energy: IV Characteristics, Sensing Circuits, Resistors in Series.</p>	<p>Bioenergetics: Structure of a Leaf, Limiting Factors, Rate of Photosynthesis, Uses of Glucose, Osmosis, Transpiration, Plant Disease and Defences, Plant Hormones.</p> <p>Ionic Compounds: Ionic Bonding, Properties of Ionic Compounds.</p> <p>Metals: Metallic Bonding, Alloys, Corrosion and its Prevention, Oxidation and Reduction.</p> <p>Electricity: Mains Electricity, Power of Appliances, The National Grid.</p>	<p>Bioenergetics: Structure of a Leaf, Limiting Factors, Rate of Photosynthesis, Uses of Glucose, Osmosis, Transpiration, Plant Disease and Defences, Plant Hormones</p> <p>Covalent Molecules: Covalent Bonding, Properties of Covalent Molecules, Diamond and Graphite, Fullerenes, Nanoparticles.</p> <p>Forces: Scalars and Vectors, Interacting Forces, Gravity, Resultant Forces.</p>	<p>Nervous and Endocrine System: Reflexes, Reflex Arcs, Reaction Time Practical, Endocrine System.</p> <p>Rates of Reaction: Collision Theory, Factors Affecting the Rate of Reaction, Catalysts, Measuring the Rate of a Reaction, Rate of Reaction Graphs.</p> <p>Forces: Centre of Mass, Moments, Forces and Elasticity.</p>
Links to prior learning	<ul style="list-style-type: none"> Year 7 Breathing Year 7 Particle Model Year 8 Periodic Table Year 8 Energy Transfers Year 9 Health and Disease 	<ul style="list-style-type: none"> Year 7 Breathing Year 7 Respiration Year 7 Particle Model Year 7 Energy Costs Year 8 Periodic Table Year 9 Health and Disease 	<ul style="list-style-type: none"> Year 8 Photosynthesis Year 8 Interdependence Year 8 Acids and Alkalis Year 9 Cells and Microscopes (Plant Structure) Year 9 Electricity 	<ul style="list-style-type: none"> Year 8 Photosynthesis Year 8 Interdependence Year 9 Cells and Microscopes (Plant Structure) Year 9 Ionic Bonding Year 9 Metal Extraction Year 9 Electricity 	<ul style="list-style-type: none"> Year 8 Photosynthesis Year 8 Interdependence Year 8 Contact Forces Year 9 Cells and Microscopes (Plant Structure) Year 9 Covalent Bonding 	<ul style="list-style-type: none"> Year 8 Contact Forces Year 10 Organisation in the Body Year 10 The Three States of Matter
Assessment	<p>Groups in The Periodic Table Exam</p>	<p>Organisation in the Body and Respiration Exam</p> <p>Acids Exam</p> <p>Energy Exam</p>		<p>Bioenergetics Exam</p> <p>Bonding Exam</p> <p>Electricity Exam</p>	<p>Nervous System and Endocrine System Exam</p> <p>Rates of Reaction Exam</p>	<p>Homeostasis Exam</p> <p>Reactions Exam</p> <p>Forces Exam</p> <p>Paper 1 End of Year Exams</p>

ASHTON COMMUNITY SCIENCE COLLEGE: SCIENCE CURRICULUM

Year 11					
	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5
Knowledge	<p><u>Biology</u> Inheritance and Variation</p> <p><u>Chemistry</u> Chemical Energy (exothermic and endothermic) Electrolysis Chemical Cells and Fuel Cells (Triple only) Moles and Calculations</p> <p><u>Physics</u> Forces</p>	<p><u>Biology</u> Evolution and Speciation</p> <p><u>Chemistry</u> Rates of Reaction Reversible Reactions and Dynamic Equilibrium</p> <p><u>Physics</u> Forces and Motion</p>	<p><u>Biology</u> Ecology</p> <p><u>Chemistry</u> Organic Chemistry Pollutants Early Earth</p> <p><u>Physics</u> Waves</p> <p>Magnetism and Electromagnetism</p>	<p><u>Biology</u> Paper 1 and Paper 2 Revision and Exam Preparation</p> <p><u>Chemistry</u> Chemical Analysis Earth's Resources Potable Water</p> <p><u>Physics</u> Space (Triple only)</p>	<p><u>Biology</u> Paper 1 and Paper 2 Revision and Exam Preparation</p> <p><u>Chemistry</u> Paper 1 and Paper 2 Revision and Exam Preparation</p> <p><u>Physics</u> Paper 1 and Paper 2 Revision and Exam Preparation</p>
Skills/ application of knowledge	<p>Inheritance and Variation: DNA Structure, Variation, Protein Synthesis, Mendel's Work, Inherited disorders, Embryo screening, Stem Cells.</p> <p>Chemical Energy: Investigating Energy Changes, Exothermic and Endothermic Reactions, Bond Energy Calculations, Heat of Neutralisation.</p> <p>Electrolysis: Electrolysis of Molten Compounds, Electrolysis of Aqueous Solution, Investigating Electrolysis, Half Equations.</p> <p>Chemical Cells and Fuel Cells: Chemical Cells, Hydrogen Fuel Cells.</p> <p>Moles and Calculations: Relative Formula Mass, Moles, Calculating Missing Masses, Limiting Reactants, Percentage Yield, Atom Economy, Molar Gas Volumes.</p> <p>Forces: Centre of Mass, Moments, Forces and Elasticity, Pressure and Upthrust.</p>	<p>Evolution and Speciation: Evolution, Mutations, Speciation, Antibiotic Resistance, Fossils, Extinction, Selective Breeding, Animal Cloning, Plant Cloning, Classification.</p> <p>Rates of Reaction: Collision Theory, Factors Affecting the Rate of Reaction, Catalysts, Measuring the Rate of a Reaction, Rate of Reaction Graphs.</p> <p>Reversible Reactions and Dynamic Equilibrium: Reversible Reactions, Dynamic Equilibrium, The Haber Process, Lab Preparation of Fertilisers, Industrial Preparation of Fertilisers, NPK Fertilisers.</p> <p>Forces and Motion: Falling Under Gravity, Newtons 1st Law, Acceleration, Stopping Distance, Momentum, Force as a Rate of Change.</p>	<p>Ecology: Ecosystems, Biotic and Abiotic Factors, Global Warming, Pollution, Bioaccumulation, Adaptations, Trophic Levels, Cycling of Materials, Sampling, Food Security, Decomposition.</p> <p>Organic Chemistry: Crude Oil, Fractional Distillation, Cracking, Combustion, Polymers, Alcohols, Carboxylic Acids, Esters, Condensation Polymers.</p> <p>Pollutants: Problems with Combustion, Global Warming, Acid Rain, Global Dimming, Human Activities, The Carbon Footprint.</p> <p>Early Earth: Evolution of the Earth's atmosphere.</p> <p>Waves: Features of Waves, Properties of Waves, Waves Required Practical, Waves in a Solid, Reflection, Refraction, Lenses, Sound, Wave Imaging, The Electromagnetic Spectrum, Infra-Red, Blackbody Radiation.</p> <p>Magnetism and Electromagnetism: Magnetic Fields, Electromagnets, Motor Effect, Electric Motors.</p>	<p>Chemical Analysis: Precipitate Tests, Ionic Equations, Flame Tests, Testing for Negative Ions, Testing Unknown Compounds, Instrumental Methods.</p> <p>Earth's Resources: Sustainable Development, Reduce, Reuse, Recycle, Life Cycle Assessment, Ceramics, Polymers and Composites.</p> <p>Potable Water: Ground Water Treatment, Salt Water Treatment, Distillation, Reverse Osmosis, Analysing Water Samples, Waste Water Treatment.</p> <p>Space: Lifecycle of Stars, Satellites, Redshift, Big Bang Theory.</p>	<p>Bespoke revision and exam preparation informed by QLA and regular teacher assessment.</p>
Links to prior learning	<ul style="list-style-type: none"> Year 8 – Inheritance, Evolution and Variation Year 8 Chemical Energy Year 8 Pressure Year 8 Speed Year 9 Metal Extraction 	<ul style="list-style-type: none"> Year 8 – Inheritance and Variation Year 8 Contact Forces Year 8 Speed Year 8 Gravity Year 10 Three States of Matter 	<ul style="list-style-type: none"> Year 7 Climate and Fuels Year 7 Magnetism and Electromagnets Year 8 Interdependence Year 8 Wave Properties and Wave Effects Year 10 Evolution and Speciation 	<ul style="list-style-type: none"> Year 7 Earth's Resources Year 8 Gravity Year 8 The Universe Year 9 Separation Techniques 	
Assessment	<p>Inheritance and Variation Exam</p> <p>Electrolysis Exam</p> <p>Calculations Exam</p> <p>Forces Exam</p>	<p>Paper 1 MOCK Exam</p> <p>Evolution and Speciation Exam</p> <p>Rates of Reaction Exam</p> <p>Forces and Motion Exam</p>	<p>Ecology Exam</p> <p>Organic Chemistry and Pollutants Exam</p> <p>Waves Exam</p> <p>Magnetism Exam</p>	<p>Chemical Analysis Exam</p> <p>Earth's Resources Exam</p> <p>Space Exam</p> <p>Paper 1 and Paper 2 MOCK Exams</p>	