

## GCSE Separate Sciences (Triple Science)

Students are taught concurrently by three subject specialist teachers.

Year 10	Autumn Term	Spring Term	Summer Term
<b>Topics Studied in AQA Separate Sciences (Triple)</b>	<b>Biology:</b> Bioenergetics <b>Chemistry:</b> Bonding and Quantitative Chemistry <b>Physics:</b> Energy	<b>Biology:</b> Organisation (of the Body) <b>Chemistry:</b> Chemical Changes review & electrolysis <b>Physics:</b> Electricity recap & new content	<b>Biology:</b> Ecology <b>Chemistry:</b> Energy changes & Rates <b>Physics:</b> Atomic structure & Particle model
<b>Skills and Key Knowledge Taught</b>	<ul style="list-style-type: none"> <li>-Photosynthesis reaction</li> <li>-Aerobic and anaerobic respiration</li> <li>-Atomic structure, ionic bonding and properties</li> <li>-Covalent and Metallic bonding and properties</li> <li>-Allotropes of carbon</li> <li>-Conservation of mass/apparent mass change</li> <li>-Moles to balance</li> <li><b>-Nanoparticles and their uses</b></li> <li>-Energy stores and pathways,</li> <li>-Kinetic, gravitational potential and elastic potential energy equations</li> <li>-Specific heat capacity, specific latent heat</li> <li>-Efficiency</li> </ul>	<ul style="list-style-type: none"> <li>-Digestive system (including food tests)</li> <li>-Enzyme action</li> <li>-Heart, blood, blood vessels, heart disease, lifestyle and non-communicable disease including cancer</li> <li>-Plant organs and tissues, plant and active transport</li> <li>-Atomic structure, ion formation</li> <li>-Metal oxides, reactivity series, displacement/metal extraction, OILRIG and ionic equations, making salts</li> <li><b>-Titrations</b></li> <li>-Circuit symbols</li> <li>-<math>Q=It</math>, <math>V=IR</math></li> <li>-Resistance/IV characteristics required practical, LDRs and thermistors,</li> <li>-Series and parallel theory</li> <li>-Mains electricity, plugs and safety, power equations, <math>E=QV</math>, national grid and transformers</li> <li><b>-Static electricity</b></li> </ul>	<ul style="list-style-type: none"> <li>-Classification and communities</li> <li>-Biotic/abiotic factors</li> <li>-Distribution of organisms, adaptations, producers, consumers</li> <li>-Decomposers, cycling materials, waste management, land use and deforestation, global warming and maintaining biodiversity</li> <li><b>-Pyramids of biomass, decomposition</b></li> <li><b>-Food production, sustainable fisheries and farming techniques</b></li> <li>-Exothermic and endothermic</li> <li>-Calculating rate, Collision Theory and activation energy, factors that affect rate, reversible reactions and equilibria, <b>Fuel Cells</b></li> <li>-Ionising radiation and risk and Atomic Structure - Emission of EM radiation, alpha, beta, gamma</li> <li>-Use of types of radiation, nuclear equations, half-life and nuclear fusion</li> <li><b>-Ionising radiation and dose compared to background radiation</b></li> <li><b>-Nuclear fusion and nuclear fission</b></li> <li>States and properties and changing state</li> <li>-Mass conservation</li> <li>-Density equation, density RP</li> <li>-Internal energy, latent heat calculations</li> <li>-Interpreting graphs, specific heat capacity (HT), <b>pressure in gases.</b></li> </ul>

<b>Links for Support/ Help at Home</b>	Use of student resources located within WHS SharePoint for students Use of additional homework booklets, therapy work packs, exam papers and/or additional resources from the class teacher via Synergy Use of online platforms such as Seneca for podcasts Watching of documentaries linked to scientific issues studied Homemade experiments at home Youtube videos to watch practical demonstrations and additional teaching Teacher discussions following assessments and/or reports Participation in enrichment opportunities and revision activities		
<b>Year 11</b>	<b>Autumn Term</b>	<b>Spring Term</b>	<b>Summer Term</b>
<b>Topics Studied in AQA Separate Sciences (Triple)</b>	<b>Biology:</b> Homeostasis and Response <b>Chemistry:</b> Organic Chemistry & Chemical analysis <b>Physics:</b> Forces & Waves	<b>Biology:</b> Cells and Infection and Response <b>Chemistry:</b> Chemistry of the atmosphere and Using resources <b>Physics:</b> Magnetism/Electromagnetism and Space	<b>Class-based Variation in Revision Topics</b> Students will be directed to revision based on student needs from PPE performance/teacher assessments. <b>GCSE Exams Undertaken</b>
<b>Skills and Key Knowledge Taught</b>	<ul style="list-style-type: none"> <li>-Homeostasis and nervous system comparison</li> <li>-Reaction time, reflex actions and reflex arc</li> <li>-Endocrine system: blood glucose</li> <li>-Kidney function and failure</li> <li>-Reproductive hormones, contraception, hormones to treat infertility</li> <li><b>-The brain and the eye structure</b></li> <li><b>-Control of body's water and nitrogen balance</b></li> <li><b>-ADH</b></li> <li><b>-Plant hormones</b></li> <li>- Formulae and structural representation of alkenes</li> <li>-Crude oil and alkanes, cracking and alkenes</li> <li>-Fractional distillation, hydrocarbon properties</li> <li><b>-Structure and formula of alkenes</b></li> <li><b>-Reactions of alkenes</b></li> <li><b>-Alcohols and carboxylic acids</b></li> <li><b>-Addition and condensation polymerisation</b></li> <li><b>-Amino acids and DNA</b></li> </ul>	<ul style="list-style-type: none"> <li>-Prokaryotic, eukaryotic, plant and animal cells</li> <li>-Microscopy</li> <li>-Specialised cells</li> <li>-Mitosis and the cell cycle</li> <li>-Diffusion, osmosis.</li> <li>-Pathogens and communication of disease</li> <li>-Culture of microorganisms</li> <li>-Human defence systems, vaccination, antibiotics, painkillers</li> <li>-Drug discovery and development</li> <li><b>-Monoclonal antibodies</b></li> <li><b>-Plant diseases</b></li> <li>- Composition of the atmosphere, cycling of Carbon, Greenhouse effect and global warming, atmospheric pollutants.</li> <li>-Resources on our planet and sustainability. Potable water and wastewater treatment, Life cycle assessments and recycling.</li> <li><b>-Using materials, the Haber process</b></li> </ul>	<ul style="list-style-type: none"> <li>-Accumulation of all content and skills</li> </ul>

	<ul style="list-style-type: none"> <li>- Pure substances and formulations</li> <li>-Chromatography</li> <li>-Identifying gases</li> <li><b>-Identification of ions</b></li> <li>- Scalar/vector and interaction pairs,</li> <li>-<math>W=mg</math>, Resultant forces, free body diagrams</li> <li>-Work done calculations</li> <li>-Distance and displacement, speed and velocity, graphs, momentum, stopping distances, newtons laws</li> <li><b>-Moments, levers and gears.</b></li> <li><b>-Change in momentum and safety features, pressure <math>p=F/a</math>, pressure in fluids including <math>p=h\rho g</math>.</b></li> <li>- Transverse and longitudinal waves, properties of waves, <b>reflection, sound waves</b>, EM waves and their uses and properties, <b>lenses, black body radiation.</b></li> </ul>	<ul style="list-style-type: none"> <li>-Magnetic poles and permanent/induced</li> <li>-Magnetic fields including RH rule, review electricity (current, resistance, PD basics)</li> <li>-Electromagnets, motor effect and Fleming's LH rule, <math>F=BIl</math>, electric motors</li> <li><b>-Uses of electromagnets</b></li> <li><b>-Loudspeakers and microphones</b></li> <li><b>-Generator effect, alternators and dynamos</b></li> <li><b>-Transformers (national grid) and efficiency</b></li> <li><b>-Objects in space/formation of our solar system - Lifecycle of stars, orbital motion and satellites</b></li> <li><b>-Red shift and evidence of The Big Bang</b></li> <li><b>-Mysteries of the Universe.</b></li> </ul>	
<p><b>Links for Support/ Help at Home</b></p>	<ul style="list-style-type: none"> <li>Use of student resources located within WHS SharePoint for students</li> <li>Use of additional homework booklets, therapy work packs, exam papers and/or additional resources from the class teacher via Synergy</li> <li>Use of online platforms such as Seneca for podcasts</li> <li>Watching of documentaries linked to scientific issues studied</li> <li>Homemade experiments at home</li> <li>Youtube videos to watch practical demonstrations and additional teaching</li> <li>Teacher discussions following assessments and/or reports</li> <li>Participation in enrichment opportunities and revision activities</li> </ul>		