



The GTS Chemistry Curriculum

Our intent

“The ability of people to understand the world in which they live and work increasingly depends on their understanding of scientific ideas and associated technologies and social questions. For most people such understanding will come mainly through education.”

Sir Paul Nurse, President of the Royal Society

We want our students to

- Be scientists
- Develop skills as well as knowledge
- Nurture a love of science
- Be curious
- Be resilient
- Be challenged
- Be scientifically literate
- Make better than 'expected' progress

Our intent is to support and prepare student for their next steps by

- Inspiring curiosity and fostering an interest in world of science
- Observing scientific phenomena and developing a conceptual understanding of scientific ideas and the world around them
- Building and developing skills and knowledge through carefully designed practical opportunities and sequenced lessons so that pupils can take advantage of opportunities, become scientifically literate and recognise chances for responsibility within their learning
- Encouraging and modelling a culture of lifelong learning through a love and interest in the natural world

“Science and everyday life cannot and should not be separated”

Rosalind Franklin

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There is an alternative curriculum was put in place for students who were not secondary ready in year 7 which aims to reinforce and embed KS2 learning and begin the progression to KS3.

An alternative pathway exists for students who need it in KS4 with Entry level course and Unit Award Schemes (AQA) to ensure qualifications for all.

Curriculum Map

Y7	Y8	Y9 (2025 onward)	Y10 (2025-2027)	Y11 (2025/26)
Particle model and separating mixtures Acids, alkalis, metals and non-metals Earth's structure	Elements and the periodic table Types of reaction and chemical energy Earth's climate and resources	Atomic structure & the periodic table Bonding structure & properties of matter Chemical change Part 1	Chemical changes Rate & extent of chemical change Energy changes Chemistry of the atmosphere and using resources.	Using resources 2 (triple) Chemical analysis Organic chemistry Quantitative chemistry

KS4 Specification links:

<https://filestore.aqa.org.uk/resources/science/specifications/AQA-8464-SP-2016.PDF>

<https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-8462-SP-2016.PDF>

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Chemistry year 7-11	
Content	Revisit
Particle model - solids, liquids, gases, elements, compounds, mixtures.	KS2 links
Separating mixtures - chromatography, filtration, evaporation, distillation, solute, solvent, solutions.	KS2 links
Acid & alkali - pH scale, indicators, neutralisation.	KS2 links
Metals & non-metals - properties, displacement, oxidation, reactivity.	KS2 links
Earth's structure - rock formation, types of rock, tectonic plates.	KS2 links
Elements - Compare the properties of elements with that of compounds. Name compounds and give their formulae. Represent atoms.	Recap Particle model (7)
Periodic table - Sort elements using their chemical data and relate this to their position on the periodic table. Patterns in reactivity.	Recap metals & non-metals (7) Recap elements (8) Recap particle model (7)
Types of reaction - Combustion, thermal decomposition, describing chemical change using a model where atoms and molecules in reactants rearrange to make the products and the total number of atoms is conserved.	Recap elements (7) Recap metals & non-metals (7)
Chemical energy - Energy changes when changing state. Exothermic and endothermic chemical reactions.	Recap particle model (7)
Earth's climate - Different gases in Earth's atmosphere, production of carbon dioxide and the changing climate, global warming, global dimming. Gas tests.	Recap Earth Structure (7)
Earth's resources -. Ores, metal extraction, displacement, electrolysis. Life cycles. Properties of ceramics, polymers and composites.	Recap Earth Structure (7)
Atomic structure & the periodic table - Atoms, elements and compounds Mixtures Scientific models of the atom	Particle model (7), metals & non-metals (8) Elements (8), Periodic table (8),

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<p>Relative electrical charges of subatomic particles</p> <p>size and mass of atoms</p> <p>Electronic structure</p> <p>Relative atomic mass</p> <p>The periodic table</p> <p>Development of the periodic table</p> <p>Metals and non metals</p> <p>Group 0</p> <p>Group 1</p> <p>Group 7</p> <p>Comparison with Group 1 elements and transition metals CHEM only</p> <p>Typical properties of transition metals CHEM only</p>	<p>types of reaction (8)</p>
<p>Bonding structure and properties of matter-</p> <p>Chemical bonds</p> <p>Ionic bonding</p> <p>Ionic compounds</p> <p>Covalent bonding</p> <p>Metallic bonding</p> <p>The three states of matter</p> <p>State symbols</p> <p>Properties of ionic compounds</p> <p>Properties of small molecules</p> <p>Polymers</p> <p>Giant covalent structures</p> <p>Properties of metals and alloys</p> <p>Metals as conductors</p> <p>Diamond</p> <p>Graphite</p> <p>Graphene and fullerenes</p> <p>Sizes of particles and their properties CHEM only</p> <p>Uses of nanoparticles CHEM only</p>	
<p>Chemical changes (First Section moved to year 9 2025 onwards)-</p> <p>Metal oxides</p> <p>The reactivity series</p> <p>Extraction of metals and reduction</p> <p>Oxidation and reduction in terms of electrons HT only</p>	

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<p>Reactions of acids with metals Neutralization of acids and salt production Soluble salts</p> <p>Required practical - Making salts</p> <p>The pH scale and neutralization Titrations</p> <p>Required practical - Neutralization CHEM only</p> <p>Strong and weak acids HT only The process of electrolysis Electrolysis of molten ionic compounds Using electrolysis to extract metals Electrolysis of aqueous solutions</p> <p>Required practical - Electrolysis Representation of reactions at electrodes as half equations HT only</p>	
<p>Rate & extent of chemical change- Calculating rates of reaction Factors which affect the rate of chemical reactions</p> <p>Required practical - Rates of reaction</p> <p>Collision theory and activation energy Catalysts Reversible reactions Energy changes and reversible reactions Equilibrium</p> <p>The effect of changing conditions on equilibrium HT only The effect of changing concentration HT only The effect of temperature on equilibrium HT only The effect of pressure changes on equilibrium HT only</p> <p>The Haber process CHEM only Production of uses of NPK fertilizers CHEM only The Haber process CHEM only</p>	
<p>Energy changes- Energy transfer during exothermic and endothermic reactions</p> <p>Required practical - Temperature changes</p> <p>Reaction profiles</p> <p>The energy change reactions HT only Cells and batteries CHEM only</p>	
<p>Chemistry of the atmosphere-</p>	

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<p>The proportions of different gases in the atmosphere</p> <p>The earths early atmosphere</p> <p>How oxygen increased</p> <p>How carbon dioxide decreased</p> <p>Greenhouse gases</p> <p>Human activities which contribute to an increase in greenhouse gases in the atmosphere</p> <p>Global climate change</p> <p>The carbon footprint and its reduction</p> <p>Atmospheric pollutants from fuels</p> <p>Properties and effects of atmospheric pollutants</p>	
<p>Using resources-</p> <p>Using the Earth's resources and sustainable development</p> <p>Potable water</p> <p>Waste water treatment</p> <p>Required practical - Water purification</p> <p>Alternative methods of extracting metals HT only</p> <p>Life cycle assessment</p> <p>Ways of reducing the use of resources</p> <p>Corrosion and its prevention CHEM only</p> <p>Alloys as useful materials CHEM only</p>	
<p>Chemical analysis-</p> <p>Pure substances</p> <p>Formulations</p> <p>Chromatography</p> <p>Required practical - Chromatography</p> <p>Test for hydrogen</p> <p>Test for oxygen</p> <p>Test for carbon dioxide</p> <p>Test for chlorine</p> <p>Flame tests CHEM only</p> <p>Metal hydroxides CHEM only</p> <p>Carbonates CHEM only</p> <p>Halides CHEM only</p> <p>Sulfates CHEM only</p> <p>Instrumental methods CHEM only</p>	

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Flame emissions spectroscopy CHEM only	
Required practical - Identifying ions CHEM only	
Organic chemistry- Crude oil, hydrocarbons and alkanes Fractional distillation and petrochemicals Properties of hydrocarbons Cracking and alkenes Structure and formula of alkenes CHEM only Reactions of alkenes CHEM only Alcohols CHEM only Carboxylic acids CHEM only additional polymerization CHEM only Condensation polymerization CHEM only Ceramics, polymers and composites CHEM only amino acids CHEM only DNA and other naturally occurring polymers CHEM only	
Quantitative Chemistry- Conservation of mass and balanced chemical equations Relative formula mass Mass changes when a reactant or product is a gas chemical measurements Moles HT only Amounts of substances in equations HT only Using moles to balanced equations HT only Limiting reactants HT only Concentration of solutions HT only Percentage yield CHEM only Atom economy CHEM only Using concentrations of solutions in mol/dm³ CHEM only Use of amount of substance in relation to volumes of gases CHEM only Percentage yield CHEM only	

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