

CHEMISTRY - CURRICULUM MAP

Science	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7 Curriculum Content inc Knowledge, Skills & Cultural Capital Apply Particle theory to explain observations • Apply knowledge of physical properties to determine the most appropriate separation method • Calculate retention factor • Work safely in the laboratory	Activate baseline test - pupils carry out the activate tests to be given a baseline level. Introductory module - Pupils study a short number of lessons to get to know the lab, safety, variables and get awarded their Bunsen Burner license., Scientific methods, graphs <u>Skills</u> - Measuring the temperature during change of state, using lab equipment including Bunsen Burners to separate mixtures.	Matter- Particle model and Separating mixtures <u>Knowledge</u> - The particle model; states of matter; melting and freezing; boiling; more changes of state; diffusion; gas pressure; inside particles; pure substances and mixtures; Solutions; solubility; filtration; evaporation and distillation and chromatography Skill- Measuring Ph,	Reactions1- 6.1 Acids and alkalis <u>Knowledge</u> - Chemical reactions; acids and alkalis; indicators and pH; acid strength; neutralization; making salts; more about elements; <u>Skills</u> - Carry out test tube reactions	6.2 Metals and non-metals <u>Knowledge</u> - Chemical reactions; more about elements; chemical reactions of metals and non-metals; metals and acids; metals and oxygen; metals and water and metal displacement reactions. <u>Skills</u> - Carry out test tube reactions	7.2 Universe <u>Knowledge</u> - The structure of the Earth; sedimentary rocks; igneous and metamorphic rocks; the rock cycle; ceramics; the night sky; the solar system; the Earth and the moon and changing ideas. <u>Skills</u> Observational skills	End of year test Review of test Practical skills development
Year 8 Skills Observing chemical reactions Manipulating equipment Interpreting results Drawing valid conclusions	C3 Atoms elements and compounds <u>Knowledge</u> Atoms and the periodic table, groups in the periodic table, making compounds, the model of the atom, atoms and electrons, metals and the periodic table, non-metals and the periodic table, states of matter, Mixtures, chromatography, structures of carbon, polymers, composites and ceramics	C3 Atoms elements and compounds <u>Knowledge</u> Atoms and the periodic table, groups in the periodic table, making compounds, the model of the atom, atoms and electrons, metals and the periodic table, non-metals and the periodic table, states of matter, Mixtures, chromatography, structures of carbon, polymers, composites and ceramics	Matter2- 5.3 Elements and 5.4 Periodic table <u>Knowledge</u> Elements; atoms; compounds; chemical formulae; polymers; the periodic table; the elements of group 0, 1 and 7. <u>Skills</u> Manipulation of test tube reactions.	Reactions2- 6.3 Types of reaction and 6.4 Chemical energy <u>Knowledge</u> Atoms in chemical reactions, combustion, thermal decomposition, conservation of mass, exothermic and endothermic, energy level diagrams and bond energies. <u>Skills</u> - Control reactions that involve heating, use quantitative techniques in Chemistry.	Using Chemistry <u>Knowledge</u> The carbon cycle, the earth, damage to our world, global warming, and its effect, the three R and extraction of metals <u>Skills</u> Drawing, Interpretation of data, research	Revision for EOYE Assessment Test Review Yr 9 Prepreparation
Year 9 Skills • Apply knowledge of experimental work to explain the idea that models change over time. • Apply charges on Atoms and ions to determine numbers of subatomic particles • Use the periodic table to determine the number of different subatomic particles and the position of electrons. • Calculate RAM to an appropriate level of precision • Apply knowledge of stability of a full outer Full outer shell to draw bonding diagrams • Write formulae for compounds • Balance reaction equations • Draw dot cross diagrams • Compounds behave differently to their constituent elements • Research different scientists to enforce the idea that theories change over time and based on experimental observations • Use Medeleev’s table to make predictions • Explain that reactivity is linked to distance, shielding and nuclear charge • Explain why distance, shielding and nuclear charge are related to reactivity • Predict reactions of group 7 using displacement reactions • Write ionic equations • Carry out risk assessments for practical work	Review Topic taught in yr 7 Knowledge Atomic Structure Atomic Structure and size of atoms, Chemical Equations Conservation of mass Balancing equations, filtration, crystallization, distillation	Knowledge Fractional distillation, Chromatography, History of the atom, ions and isotopes, electronic structure The periodic table Development of the periodic	Knowledge The Periodic Table Metals and non-metals Groups in the Periodic Table Group 1, group 7 and group 0, Properties of transition metals	Knowledge States of Matter The three states of matter and state symbols, limitation of the particle model, the particle model, atoms into ions, Ionic bond formation	Giant ionic bonds and their properties, covalent bond formation, simple covalent bonds, giant covalent bonds and their properties(diamond and graphite)	Review for test Assessment Graphenes and fullerenes, nanoparticles,

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Year 10 - Write chemical and ionic equations for acid reactions and displacement reactions - Design a method to effectively control variables for an experiment Write half equations for reactions at electrodes - Discuss the link between reactivity and product formed - Use knowledge of reactivity to determine the most appropriate method of metal extraction - Evaluate of data to draw conclusions Explain that strong and concentrated have different meanings - Write equations to show dissociation of strong and weak acids - Calculate gas volumes in reactions. - Calculate product quantities for reactions involving a limiting reagent - Draw displayed formulae - Asses the differences between condensation and addition reactions - Predict likely reactions of compounds based on their functional groups - Name organic compounds for the homologous series on the syllabus. Make predictions about the position of equilibrium when changes are made to conditions - Analyse data to assess the most favourable reaction conditions. - Explain the compromise conditions used in the Haber process to get best yield / rate	Knowledge Chemical changes Reactivity of metals Metal oxides, The reactivity series, Displacement reaction, Oxidation and reduction, Salt formation, Required practical 1 and 2 Nuetralisation and the PH scale, strong and weak acids,	Quantitative chemistry Knowledge Relative formula mass and moles, using mass to work our formulas, equations and calculations, The yield of a chemical reaction, atom economy Electrolysis Knowledge Key terms in electrolysis, Changes at electrode, extraction of Aluminum, electrolysis in an aqueous solution, Required practical 3	Energy changes Knowledge Endo and exothermic reaction Required practical 4 Using energy transfer Reaction profile , activation energy, bond energy calculations, Chemical cells and batteries Fuel cells	Rates of reaction Knowledge Rates of Reaction Factors affecting rates of reaction Measuring rates of reaction, Collision theory, energy and reversible reaction, Dynamic equilibrium, altering conditions Required practical 5	Quantitative chemistry Knowledge Expressing concentration, titration required practical 6, titration calculation, Volume of gases, Revision for exam	Assessment C Crude oil and fuels Knowledge Alkanes and alkenes, Fractional distillation, Burning hydrocarbons, Cracking of crude oil,
Year 11 - Draw displayed formulae - Asses the differences between condensation and addition reactions - Predict likely reactions of compounds based on their functional groups - Name organic compounds for the homologous series on the syllabus . - Explain how properties are linked to use of a material. - Compare products based on lifecycle assessment using data given - Compare the ease of obtaining potable water (by type of water available) in different geographical regions	Organic Chemistry Knowledge Reaction of Alkenes, Structures of Alcohols, Carboxylic acids and Esters, Reaction and uses of Alcohols, Carboxylic acid and esters, addition polymerization, polymers, properties of polymers, Condensation polymerization, Natural polymers, DNA Chemical analysis Knowledge Pure substance and mixtures, Chromatography analysis, testing for gases, Required practical	Chemical analysis Knowledge Testing for gases, Test for positive ions, Tests for negative ions, Instrumental analysis The earth’s atmosphere Knowledge History of the atmosphere, the volving atmosphere, greenhouse gases, Global climate change, atmospheric pollutants, The earth’s resources Knowledge Finite and renewable resources. safe water to drink, treating waste water, extracting metals, life cycle assessment, the three R’s	The earth’s Resources Knowledge Rusting, Glass ceramics ad composites, Making ammonia, The economics of the Haber process, Making fertilizers in the lab, making fertilizers in industry	Revision		