Year 7 Curriculum Sequencing Grid **Subject:**				
		Sequence of Units taught in one year		
Unit	Unit 1 Matter	Unit 2 Atomic Structure	Unit 3 Separating Substances	Unit 4 Acids and Alkalis
Key Retainable Substantive Knowledge	- The Particle Model. - States of Matter. - Melting, Freezing and Boiling. - Density. - Diffusion. - Gas Pressure.	- Atoms. - Protons, Neutrons & Electrons. - Electronic Configuration. - Elements. - Compounds. - Calculating RFM. - Bonding. - Polymers	- Pure Substances and Mixtures. - Solutions and Solubility. - Filtration. - Evaporation. - Distillation. - Chromatography.	- Acids and Alkalis. - pH. - Indicators. - Neutralisation. - Making Salts.
Key Retainable Disciplinary Knowledge	**Analyse and Enquire:** make and record observations using appropriate methods during laboratory work, paying attention to health and safety. **Enquire:** make predictions **Analyse and Enquire:** make and record observations **Analyse:** interpret data from graphs and tables. **Maths Skills** Graph construction and interpretation. Reading negative numbers. **Maths Skills** Know and manipulate the density equation.	**Illustrate:** Construct diagrams of atoms using the Bohr model. The model includes the labelling of Protons, Neutrons and Electrons, as well as the shells and nucleus. **Enquire:** Use the Periodic Table to identify different elements with regards to their symbols. **Enquire:** make and record observations of chemical reactions **Analyse:** present observations using tables **Analyse:** interpret observations to identify patterns and draw conclusions **Solve:** identify risks and hazards. **Enquire:** Use the Periodic Table to identify different elements with regards to their symbols, atomic number and mass numbers. **Maths Skills** Students calculate RFMs. This entails replacing chemical formula with numbers followed by the use of multiplication and addition to attain a value. **Illustrate:** Using word equations show how elements bond together to form compounds. **Analyse:** identify patterns in data to draw conclusions **Enquire:** make predictions using your scientific knowledge **Communicate:** present explanations of data.	**Enquire:** make predictions using your scientific knowledge on what will be the best way to separate a mixture. **Enquire:** plan a method for separating your mixture. **Enquire:** choose the best techniques and apparatus to separate simple mixtures, making sure you work safely. **Analyse:** present observations in appropriate tables **Analyse and Communicate:** give explanations of your observations **Solve:** evaluate risks. **Enquire:** identify independent, dependent, and control variables and decide how to control these to make your investigation fair. **Analyse:** make predictions using what you have learnt about solubility. **Solve:** evaluate risks **Analyse:** present data in a suitable table. **Enquire:** use your scientific knowledge to predict the behaviour of substances so you can design a method to separate them. **Enquire:** use suitable methods in experimental work. **Communicate:** explain how your method has worked using your scientific knowledge. **Analyse and Solve:** interpret your chromatogram.	**Enquire:** use appropriate methods during laboratory work, paying attention to health and safety **Enquire:** make and record observations and data in tables **Analyse:** interpret observations and data **Analyse and Communicate:** evaluate your observations and data **Enquire:** measure precise volumes of solutions using pipettes, measure changes in the pH of solutions using indicators. **Analyse:** plot graphs, including lines of best fit. **Maths Skills** Use the pH scale to determine acidity/ alkalinity. Graph construction and interpretation. **Analyse:** evaluate data and discuss limitations. **Communicate:** construct explanations and communicate your findings. **Communicate:** pay attention to objectivity and critique claims. **Solve:** assess risks.
Key Tier Three Vocabulary	boil (boiling), boiling point, change of state , condense (condensation) density, diffusion, evaporate	atom, chemical formula, chemical properties, chemical symbol, compound, electron, element(s), molecule, natural polymer, neutron, nucleus, polymer, proton, relative atomic mass, relative formula mass, shell, synthetic polymer	chromatogram, chromatography, dissolve, distillation, filtrate, filtration mixture, pure substance, residue, saturated solution, solubility solubility curve, soluble (insoluble), solute, solution, solvent, states of matter sublime (sublimation), substance	acid, alkali, base, chemical property, chemical reaction, chemical symbol concentrated , concentration, corrosive, dilute, displace, displacement element, indicator, irritant, litmus, neutral, neutralisation, salt, strong acid

	(evaporation), freeze (freezing), sublimation gas, gas pressure, liquid, material, melt (melting), melting point particle, particle model, property, solid, liquid, gas, kinetic			universal indicator, weak acid
Opportunities for reading	Textbooks, revision guides, news articles etc as relevant, states of matter reading task in lesson 2.	Textbooks, revision guides, news articles etc as relevant, atoms reading task in lesson 2.	Textbooks, revision guides, news articles etc as relevant, separating techniques in lesson 1.	Textbooks, revision guides, news articles etc as relevant
Authentic Connections – Cross Curricular Links	Linked to states of matter in Physics GCSE.	Linked to atomic structure in Physics in GCSE.	Linked to particle model in GCSE physics.	Linked to Y8 Biology organisation.
Key Assessments				

Year 8 Curriculum Sequencing Grid				
Subject:	**Term One**	**Term Two**	**Term Three**	
Unit	Unit 1 – The Periodic Table	Unit 2 – Chemical Changes	Unit 3 – Energy Changes	Unit 4 - Rocks
Key Retainable Substantive Knowledge	The Periodic Table The elements of Group 1 The elements of Group 7 The elements of Group 0	Chemical reactions Word Equations Chemical formulae Properties of metals and non-metals Metals and acids Metals and oxygen Metals and water Metal displacement reactions	Combustion Thermal decomposition Conservation of mass Exothermic and Endothermic Reactions Energy level diagrams	Structure of the Earth Sedimentary Rocks Igneous Rocks Metamorphic Rocks The Rock Cycle
Key Retainable Disciplinary Knowledge	**Analyse:** interpret observations and data to identify patterns and draw conclusions **Analyse:** discuss limitations **Analyse:** present data about the Periodic Table **Communicate:** communicate ideas and construct explanations **Solve:** understand how scientific ideas have changed.	**Enquire:** use appropriate methods and apparatus for an experiment **Enquire:** make and record observations **Analyse:** interpret observations to draw conclusions. **Analyse:** present observations using tables **Maths Skills:** Writing and balancing chemical formula. Use formulae to decide a compound's name.	**Enquire:** make and record observations and data **Analyse:** present your observations and data in tables **Analyse:** interpret observations to identify patterns and draw conclusions **Communicate:** explain any patterns identified in your observations and data. **Maths Skills:** Reading scales and making measurements. **Maths Skills** Graph construction and Interpretation.	
Key Tier Three Vocabulary	alkali metals, chemical properties, chemical symbol, group, Group 0	acid, alkali, base, chemical property, chemical reaction, displace	combustion, conservation of mass, conserved, decomposition	Igneous rock, Sedimentary rock, Metamorphic rock, Erosion, Weathering, Deposition, Compaction, Cementation, Magma, Lava,

	Group 1, Group 7, halogen, noble gases, period, Periodic table physical properties, trend, unreactive	displacement, metal, non-metal, oxidation, oxide, product, reactant reactive, reactivity, reactivity series, reversible, salt, word equation	endothermic reaction, energy level diagram, exothermic reaction physical change, thermal decomposition	Crystal, Fossil, Permeability, Porosity, Rock cycle
Opportunities for reading	Textbooks, revision guides, news articles etc as relevant.	Textbooks, revision guides, news articles etc as relevant.	Textbooks, revision guides, news articles etc as relevant.	Textbooks, revision guides, news articles etc as relevant.
Authentic Connections – Cross Curricular Links	Links to the Physics GCSE curriculum.	Links to the Physics and Technology GCSE curriculum.	Links to Physics GCSE curriculum	Links to the Biology and Geography GCSE curriculum
Key Assessments				

Year 9 Curriculum Sequencing Grid			
Subject:	**Term One**	**Term Two**	**Term Three/Term One Y10**
Unit	Unit 1: Atomic structure and the periodic table	Unit 2: Bonding	Unit 3: Quantitative Chemistry
Key Retainable Substantive Knowledge	• Atoms, elements, compounds and mixtures, separation techniques • The periodic table • Properties of transition metals	• Chemical bonds (ionic, covalent and metallic) • How bonding and structure are related to the properties of a substance • Structure and bonding in carbon • Bulk and surface properties	• Balanced symbol equations and conservation of mass • Amount of substances in equations • Percentage yield (Triple Chemistry) • Concentration/ amount of solutions (Triple Chemistry)
Key Retainable Disciplinary Knowledge	**Analyse:** interpret data **Enquire:** make and record observations **Maths Skills:** Balancing equations **Enquire:** use appropriate methods during laboratory work, paying attention to health and safety. **Analyse:** interpret observations and data to identify patterns and draw conclusions. **Communicate:** use scientific terminology when explaining observations for your experiment. **Predict:** Predict the outcome of a practical before it has taken place.	**Practical –** Investigating the properties of solids, liquids and gases. Then applying the findings from the practical to the particle model to see why the objects had the properties they showed. **Enquire:** use appropriate methods during laboratory work, paying attention to health and safety. **Enquire:** make and record observations and data in tables. **Analyse:** interpret observations and data to identify patterns and draw conclusions. **Maths Skills** Converting units from nm to m. Calculating the surface area to volume ratio.	**Enquire:** use appropriate methods during laboratory work, paying attention to health and safety. **Enquire:** make and record observations and data in tables. **Analyse:** interpret observations and data **Analyse and Communicate:** evaluate your observations and data.
Key Tier Three Vocabulary	Aqueous, solution, atom, atomic number balanced symbol equation, chromatography, compound, electron, electronic structure, element, group, ion, isotope, law of conservation of mass, mass number, neutron, noble gases, nucleus (of an atom), periodic table, product, proton, reactant, shell, state symbol, symbol	Bonding, alloy, covalent bond, covalent bonding, delocalised electron, dot and cross diagram, electron, fullerene, gases, giant covalent structure, giant lattice, giant structure, intermolecular forces, ionic bond, ion, liquids, nanoscience, particle theory, polymer, Solids, states of matter	Avogadro constant, burette, concentration, concordant, end point limiting reactant, mole, percentage yield, pipette, relative atomic mass, Ar, relative formula mass, Mr, titration yield

	equation, word equation, filtering, distillation		
Opportunities for reading	Textbooks, revision guides, news articles etc as relevant.	Textbooks, revision guides, news articles etc as relevant.	Textbooks, revision guides, news articles etc as relevant.
Authentic Connections – Cross Curricular Links	Links to the Physics GCSE curriculum.	Links to the Physics GCSE curriculum.	Links to the Maths GCSE curriculum
Key Assessments			

Year 10 Curriculum Sequencing Grid			
Subject:	**Term One**	**Term Two**	**Term Three**
Unit	**Unit 4: Chemical Changes**	**Unit 5: Energy Changes**	**Unit 6: The rates and extent of chemical change**
Key Retainable Substantive Knowledge	• Reactivity series and Displacement reactions. • Metal Extraction. • Making and naming salts. • Acids and Alkalis. • Electrolysis. • Electrolysis of aluminium. • Electrolysis of solutions.	• Exothermic & endothermic reactions • Reaction profiles • Bond energy calculations • Triple - Chemical cells, batteries & fuel cells	• Collision theory • Factors affecting rate of reaction • Catalysts • Reversible reactions • Equilibrium
Key Retainable Disciplinary Knowledge	**Enquire:** use appropriate methods during laboratory work, paying attention to health and safety. **Enquire:** make and record observations and data in tables. **Analyse:** interpret observations and data **Analyse and Communicate:** evaluate your observations and data.	**Analyse:** plot graphs, including lines of best fit. **Analyse:** interpret observations and data **Analyse and Communicate:** evaluate your observations and data. **Enquire:** use appropriate methods during laboratory work, paying attention to health and safety. **Enquire:** make and record observations and data in tables.	**Enquire:** use appropriate methods during laboratory work, paying attention to health and safety. **Enquire:** make and record observations and data in tables. **Analyse:** plot graphs, including lines of best fit. **Analyse:** interpret observations and data **Analyse and Communicate:** evaluate your observations and data. **Calculate:** Calculate rates of reaction from graph data. **Illustrate:** use chemical convention when illustrating reversible reactions.

Key Tier Three Vocabulary	Acid, Alkali, Base, Neutralisation, pH scale, Reactivity series, Oxidation, Reduction, Displacement reaction, Extraction, Electrolysis, Electrolyte, Anode, Cathode, Cation, Anion, Salt, Soluble, Insoluble, Precipitate, Precipitation reaction, Crystallisation, Indicator, Filtration, Evaporation.	Exothermic, Endothermic, Activation energy, Energy profile, Reaction pathway, Bond energy, Bond breaking, Bond making, Energy transfer, Chemical cell, Battery, Voltage, Electrochemical cell, Fuel cell, Hydrogen fuel cell, Electrolyte, Catalyst, Enzyme, Reaction rate.	Activation energy, Anhydrous, Catalyst Climate change, Closed system, Collision theory, Equilibrium, Hydrated Le Chatelier's Principle, Precise/ precision, Reversible reaction
Opportunities for reading	Textbooks, revision guides, news articles etc as relevant.	Textbooks, revision guides, news articles etc as relevant.	Textbooks, revision guides, news articles etc as relevant.
Authentic Connections – Cross Curricular Links	Key links to GCSE Physics.	Key links to GCSE Biology and Physics.	Key links to GCSE Biology and Physics.
Key Assessments			

Year 11 Curriculum Sequencing Grid			
Subject:	**Term One**	**Term Two**	**Term Three**
Unit	**Chemistry Unit 7: Organic Chemistry** **Chemistry Unit 8: Chemical analysis**	**Chemistry Unit 9: The Earth's Atmosphere** **Chemistry Unit 10: The Earth's Resources**	
Key Retainable Substantive Knowledge	**Unit 7** • Hydrocarbons & alkanes • Fractional distillation • Burning fuels - Cracking • **Triple** - Alkenes - Alcohols, carboxylic acids & esters - Polymers & polymerisation **Unit 8** • Purity and formulations • Chromatography • Identification of gases • **Triple** - Identification of ions • Instrumental techniques	**Unit 9** • History of our atmosphere • Our evolving atmosphere • Greenhouse gases • Global climate change • Atmospheric pollution Finite and renewable resources **Unit 10** • Water safe to drink • Purify and test water. • Extracting metals from ores • Life cycle assessments **Triple** • Rusting • Useful alloys • The properties of polymers • Glass, ceramics and composites • Making ammonia - the Haber process • The economics of the Haber process • Making fertilizer in the lab • Making fertilizer in industry • Reduce, reuse and recycle	

Key Retainable Disciplinary Knowledge	**Illustrate:** Be able to illustrate the first four alkanes structurally. **Maths skills:** Be able to recall and use the general formula for alkanes. **Oracy Task** – Think, Pair, Share – Use of catalyst/ builder **Analyse:** interpret observations and data **Analyse and Communicate:** evaluate your observations and data. **Enquire:** use appropriate experimental methods. **Enquire:** make and record observations. **Analyse:** interpret observations and data to identify patterns and draw conclusions. **Communicate:** construct explanations and communicate your findings. **Solve:** assess risks. **Maths Skills** Be able to calculate Retention Factors (Rf) for the different components in a mixture.	**Maths Skills** Use tabulated data to construct pie charts. Use pie charts to identify changes in percentage compositions. **Oracy Task** – Think, Pair, Share – Use of catalyst/ builder **Analyse:** plot graphs, including lines of best fit. **Maths Skills** Graph construction and interpretation. **Analyse:** evaluate data and discuss limitations. **Communicate:** construct explanations and communicate your findings. **Communicate:** pay attention to objectivity and critique claims. **Analyse and Communicate:** evaluate your observations and data. **Oracy Task** – Think, Pair, Share – Use of catalyst/ builder **Illustrate:** Be able to illustrate the process of water purification through a flow chart highlighting each of the main stages. **Enquire:** use appropriate methods during laboratory work, paying attention to health and safety. **Enquire:** make and record observations and data in tables. **Analyse:** interpret observations and data. **Analyse and Communicate:** evaluate your observations and data. **Maths Skills** Use the pH scale to determine acidity/ alkalinity. Graph construction and interpretation. **Maths Skills** Calculate percentage compositions. Calculate unknown concentrations via the manipulation of the concentration/ moles/ volume formula.	

Key Tier Three Vocabulary	**Unit 7** Alkane alkene cracking distillation double bond flammable fraction fractional distillation general formula hydrocarbon mixture oxidised saturated hydrocarbon thermal decomposition unsaturated hydrocarbon viscosity fermentation, functional group homologous series addition polymerisation DNA (deoxyribonucleic acid) monomers nucleotides polymer **Unit 8** Purity, potable, mixture, formulation, chromatography, chromatogram, solvent, soluble, solute, solution, retention factor, nichrome wire, pipette, spectroscopy.	**Unit 9** Atmosphere acid rain sulfur dioxide carbon footprint global dimming incomplete combustion nitrogen oxides carbon particulate photosynthesis **Unit 10** Bioleaching blast furnace, life cycle assessment (LCA)non-renewable potable water recycles thermal decomposition rusting corrosion sacrificial anode composite ceramic thermosoftening thermosetting Haber Process fertilisers.	
Opportunities for reading	Textbooks, revision guides, news articles etc as relevant.	Textbooks, revision guides, news articles etc as relevant.	
Authentic Connections – Cross Curricular Links	Key links to GCSE Physics.	Key links to GCSE Biology and Physics.	
Key Assessments			