

## Subject Knowledge Audit - Chemistry

Please decide on your ability to teach the content/skills listed below at KS3/KS4	
<b>KEY:</b>	
4	No knowledge – Currently a gap in my subject area
3	Limited knowledge – Would not feel confident to teach this content
2	Good knowledge – Confident in ability to teach with some guidance
1	Expert knowledge - Confident to teach
The completed subject audit will be used by your Mentor to create your Individual Training Plan. Your progress will be reviewed on a fortnightly basis.	
<b>You should review and record your progress at each review window below (and share this with your Mentor)</b>	

Subject Area:	Science – Chemistry KS3	Baseline (4 -1)	Dec. (3 -1)	May (3 -1)	Target for NQT year if applicable
The particulate nature of matter	The properties of the different states of matter in terms of the particle model, including gas pressure				
	Changes of state in terms of the particle model				
Atoms, elements and compounds	A simple atomic model				
	The differences between atoms, elements and compounds				
	Chemical symbols and formulae for elements and compounds				
	Conservation of mass, changes of state, and chemical reactions				
Pure and impure substances	The concept of a pure substance				
	Mixtures, including dissolving				
	Diffusion in terms of the particle model				

## Subject Knowledge Audit - Chemistry

Subject Area:	Science – Chemistry KS3	Baseline (4 -1)	Dec. (3 -1)	May (3 -1)	Target for NQT year if applicable
	Simple techniques for separating mixtures; filtration, evaporation, distillation, chromatography				
	The identification of pure substances				
Chemical reactions	Chemical reactions as a rearrangement of atoms				
	Representing chemical reactions using formulae and using equations				
	Combustion, thermal decomposition, oxidation and displacement reactions				
	Defining acids and alkalis in terms of neutralisation reactions				
	The PH scale, indicators, reactions of acids				
	What catalysts do				
Energetics	Energy changes on changes of state				
	Exothermic and endothermic chemical reactions				
The Periodic table	The varying physical and chemical properties of different elements				
	The principles underpinning the Mendeleev Periodic table				
	How patterns in reactions can be predicted with reference to the periodic table				
	Properties of metals, non-metals and oxides				

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Subject Area:	Science – Chemistry KS3	Baseline (4 -1)	Dec. (3 -1)	May (3 -1)	Target for NQT year if applicable
Materials	The order of metals and carbon in the reactivity series				
	The use of carbon in obtaining metals from metal oxides				
	Properties of ceramics, polymers and composites				
Earth and Atmosphere	The composition and structure of the Earth				
	The rock cycle				
	Earth as a source of limited resources and the efficacy of recycling				
	The carbon cycle				
	The composition of the atmosphere				
	The production of carbon dioxide by human activity and the impact on climate				

Subject Area:	Science – Chemistry KS4	Baseline (4 -1)	Dec. (3 -1)	May (3 -1)	Target for NQT year if applicable
Atomic structure and the Periodic Table	A simple model of the atom consisting of the nucleus and electrons, relative atomic mass, electronic charge and isotopes				
	The number of particles in a given mass of a substance				
	The modern Periodic Table, showing elements arranged in order of atomic number				

## Subject Knowledge Audit - Chemistry

Subject Area:	Science – Chemistry KS4	Baseline (4 -1)	Dec. (3 -1)	May (3 -1)	Target for NQT year if applicable
	Position of elements in the Periodic Table in relation to their atomic structure and arrangement of outer electrons				
	Properties and trends in properties of elements in the same group				
	Characteristic properties of metals and non-metals				
	Chemical reactivity of elements in relation to their position in the Periodic Table				
Structure, bonding and the properties of matter	Changes of state of matter in terms of particle kinetics, energy transfers and the relative strength of chemical bonds and intermolecular forces				
	Changes of types of chemical bonding: ionic, covalent, and metallic				
	Bulk properties of materials related to bonding and intermolecular forces				
	Bonding of carbon leading to the vast array of natural and synthetic organic compounds that occur due to the ability of carbon to form families of similar compounds, chains and rings				
	Structures, bonding and properties of diamond, graphite, fullerenes and graphene				

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Subject Area:	Science – Chemistry KS4	Baseline (4 -1)	Dec. (3 -1)	May (3 -1)	Target for NQT year if applicable
Chemical changes	Determination of empirical formulae from the ratio of atoms of different kinds				
	Balanced chemical equations, ionic equations and state symbols				
	Identification of common gases				
	The chemistry of acids; reactions with some metals and carbonates				
	pH as a measure of hydrogen ion concentration and its numerical scale				
	Electrolysis of molten ionic liquids and aqueous ionic solutions				
	Reduction and oxidation in terms of loss or gain of oxygen.				
Energy changes in chemistry	Measurement of energy changes in chemical reactions (qualitative)				
	Bond breaking, bond making, activation energy and reaction profiles (qualitative)				
Rate and extent of chemical change	Factors that influence the rate of reaction: varying temperature or concentration, changing the surface area of a solid reactant or by adding a catalyst				
	Factors affecting reversible reactions				
Chemical analysis	Distinguishing between pure and impure substances				
	Separation techniques for mixtures of substances: filtration, crystallisation,				

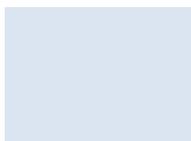
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Subject Area:	Science – Chemistry KS4	Baseline (4 -1)	Dec. (3 -1)	May (3 -1)	Target for NQT year if applicable
	chromatography, simple and fractional distillation				
	Quantitative interpretation of balanced equations				
	Concentrations of solutions in relation to mass of solute and volume of solvent				
Chemical and allied industries	Life cycle assessment and recycling to assess environmental impacts associated with all the stages of a product's life				
	The viability of recycling of certain materials				
	Carbon compounds, both as fuels and feedstock, and the competing demands for limited resources				
	Fractional distillation of crude oil and cracking to make more useful materials				
	Extraction and purification of metals related to the position of carbon in a reactivity series				
Earth and atmospheric science	Evidence for composition and evolution of the Earth's atmosphere since its formation				
	Evidence, and uncertainties in evidence, for additional anthropogenic causes of climate change				
	Potential effects of, and mitigation of, increased levels of carbon dioxide and methane on the Earth's climate				



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Subject Area:	Science – Chemistry KS4	Baseline (4 -1)	Dec. (3 -1)	May (3 -1)	Target for NQT year if applicable
	Common atmospheric pollutants: sulphur dioxide, oxides of nitrogen, particulates and their sources				
	The Earth’s water resources and obtaining potable water				





**Subject Knowledge Audit - Chemistry**

**Evidence of subject knowledge development**

Record below the things you have **read and researched** to improve your subject knowledge in the boxes below.

Term 1	September/ October	November/ December
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Term 2	January/ February	March/ April
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Term 3	May/ June	June/ July
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Please sign this sheet off at the end of the training year:

Signed: \_\_\_\_\_ (Trainee)      Date: \_\_\_\_\_

Signed: \_\_\_\_\_ (Mentor)      Date: \_\_\_\_\_