Long Term Plan: Chemistry Year 9

ARCHBISHOP SENTAMU ACADEMY
CHURCH OF ENGLAND

Half term	Unit title	Key knowledge/ Content to learn and retain	Essential skills to acquire (subject & generic)	Link to subject ethos and driver (rename)	Anticipated misconceptions	Links to previous KS	Links to future KS	Opportunity for stretch for high prior attainers	SMSC & British Values	Cultural Capital	Career Link
One	Atomic Structure and Periodic Table	The structure of the atom, including the mass and charge of subatomic particles. The history of the atom, including key moments in the development of the nuclear model Isotopes and atomic structure The arrangement	Using data to make predictions. The use of timelines Extended writing Reading for comprehension		Students often underestimate just how small atoms are, and how much of them is empty space. Students often mix up the names of the scientists responsible for each discovery.	In year 7 students studied the general arrangement of the periodic table and the dalton model of the atom	This unit directly feeds in the first Unit of GCSE Chemistry.	Considering why the results of the Gold Foil Experiment lead to the development of the nuclear model of the atom.	The contribution of British scientists to scientific understanding.	The historical importance of the various figures that have contributed to the development of the periodic table and the understanding of the atom.	As the central science, Chemistry opens doors to a wide number of STEM field careers.

		of the periodic table Trends in reactivity of groups one, seven and zero.									
Two	Atomic Structure and Periodic Table	The structure of the atom, including the mass and charge of subatomic particles. The history of the atom, including key moments in the development of the nuclear model Isotopes and atomic structure The arrangement of the periodic table, trends in reactivity of groups one, seven and zero.	Using data to make predictions. The use of timelines Extended writing Reading for comprehension		Students often underestimate just how small atoms are, and how much of them is empty space. Students often mix up the names of the scientists responsible for each discovery.	In year 7 students studied the general arrangement of the periodic table and the dalton model of the atom	This unit directly feeds in the first Unit of GCSE Chemistry.	Considering why the results of the Gold Foil Experiment lead to the development of the nuclear model of the atom.	The contribution of British scientists to scientific understanding.	The historical importance of the various figures that have contributed to the development of the periodic table and the understanding of the atom.	As the central science, Chemistry opens doors to a wide number of STEM field careers.

Three	Bonding	Ionic bonds as the transfer of electrons and covalent bonds as the sharing of electrons Drawing dot and cross diagrams for ionic and covalent bonds The structure and properties of ionic, simple covalent, giant covalent and metallic bonding. Polymers and fullerenes The size and use of nanoparticles	Using data to make predictions. Interpreting data presented in tabular and graphical form Extended writing (HT Only) Working with standard form		Graphite as a special case, in terms of its conductivity. Students often confuse sharing and transferring electrons and this will need to be practiced extensively. The use of the terms "Intermolecular Forces" and "Electrostatic Forces" The true size of nanoparticles	Students will have previously looked at the common properties of a number of materials, though this will be the first time that students have explored explanations for those properties	This unit feeds directly into Unit 2 of GCSE Chemistry	Considering why graphite is able to conduct electricity in terms of its bonding. Calculating the size of nanoparticles.	Working safely in the lab, and respecting each other's workspace	The use of new nanotechnology, and its application in a number of fields.	As the central science, Chemistry opens doors to a wide range of STEM field careers.
Four	Bonding	Ionic bonds as the transfer of electrons and covalent bonds as the sharing of electrons	Using data to make predictions. Interpreting data presented in tabular and graphical form		Graphite as a special case, in terms of its conductivity. Students often confuse sharing and	Students will have previously looked at the common properties of a number of materials,	This unit feeds directly into Unit 2 of GCSE Chemistry	Considering why graphite is able to conduct electricity in terms of its bonding.	Working safely in the lab, and respecting each other's workspace	The use of new nanotechnology, and its application in a number of fields.	As the central science, Chemistry opens doors to a wide range of STEM field careers.

		Drawing dot and cross diagrams for ionic and covalent bonds The structure and properties of ionic, simple covalent, giant covalent and metallic bonding. Polymers and fullerenes The size and use of nanoparticles	Extended writing (HT Only) Working with standard form		transferring electrons and this will need to be practiced extensively. The use of the terms "Intermolecular Forces" and "Electrostatic Forces" The true size of nanoparticles	though this will be the first time that students have explored explanations for those properties		Calculating the size of nanoparticles.			
Five	Chemical Changes	The reactivity series and application of this to displacement reactions. Reduction and oxidation, in terms of electrons Reactions of metals, acids, and bases in terms of	Writing ionic equations to show oxidation and reduction Writing balanced chemical equations Safely using laboratory equipment and glassware		Some students may refer to neutralization as redox reactions - but these are one of the few reactions in this unit that is not redox. Students often confuse the terms "Cation"	This unit follows directly on form the first two units of year 8, extending students knowledge to explore the concepts of redox reactions in greater deprh	Builds directly into Unit 4 of Paper One at GCSE	Writing half equations for redox reactions and electrolysis.	Working safely in the lab, and respecting each other's workspace	The social, economic and environmental impact of the various methods of extracting metals.	As the central science, Chemistry opens doors to a wide range of STEM field careers.

		oxidation and reduction. Electrolysis of molten and aqueous substances	Accurately recording data Presenting and interpreting data in tabular and graphical form.		"Anion" "Cathode" and "Anode"						
Six	Chemical Changes	The reactivity series and application of this to displacement reactions. Reduction and oxidation, in terms of electrons Reactions of metals, acids, and bases in terms of oxidation and reduction. Electrolysis of molten and aqueous substances	Writing ionic equations to show oxidation and reduction Writing balanced chemical equations Safely using laboratory equipment and glassware Accurately recording data Presenting and interpreting data in tabular and graphical form.		Some students may refer to neutralization as redox reactions - but these are one of the few reactions in this unit that is not redox. Students often confuse the terms "Cation" "Anion" "Cathode" and "Anode"	This unit follows directly on form the first two units of year 8, extending students knowledge to explore the concepts of redox reactions in greater deprh	Builds directly into Unit 4 of Paper One at GCSE	Writing half equations for redox reactions and electrolysis.	Working safely in the lab, and respecting each other's workspace	The social, economic and environmental impact of the various methods of extracting metals.	As the central science, Chemistry opens doors to a wide range of STEM field careers.