Long Term Plan: Chemistry Year 10

ARCHBISHOP SENTAMU ACADEMY
Church of England

"Science is simply the word we use to describe a method of organising our curiosity."

The programme for Y10 and 11 differs in comparison to KS3. There are 5 sets in each population. X/Y 2, 3, 4 and 5 classes will be taught combined science content and will either see a subject specialist teacher three times a fortnight, or have a solo teacher 9 times a fortnight.

There are 2 data collection points for Y10

Staff use the **Curriculum Road Map** to ensure they teach the correct topic with enough time to cover the depth and breadth of our curriculum.

Topic	Unit title	Key knowledge/ Content to learn and retain	Essential skills to acquire (subject & generic)	Anticipated misconceptions	Links to previous KS	Links to future KS	Opportunity for stretch for high prior attainers
One	Quantitative Chemistry	Mass, Mr and Moles Concentration of Solution (HT Only) Calculating reaction masses Balancing Equations using moles % Yield and Atom Economy	Changing the subject of an equation Calculating percentage Using ratios Interpreting data presented in both graphical and tabular form. Using laboratory equipment and glassware Recording accurate data Calculating a mean	The difference between g/dm and mol/dm Students often struggle to identify when they need to use molar coefficients in a calculation and when they don't Calculating the Mr of of diatomic molecules, particularly in reaction mass calculations	At KS3 students have studied the mechanics of chemical reactions and have also been introduced to the idea of conservation of mass and balanced equations. Students have also studied neutralisation reactions which	Quantitative chemistry forms the basis of much of the work done during physical chemistry during A-Level.	Higher prior attainments can be challenged to work through multi-step problems involving different equations

			Identifying anomalous and concordant results. Converting units		builds directly into titration		
SMSC & British Values	British values in science Mathematical problems can be put into real world contexts to explore a variety of concepts and scenarios						
Cultural Capital	Mathematical problems can be put into real world contexts to explore a variety of concepts and scenarios						
Career Link	https://www.bbc.co.uk/bitesize/tags/zjb8f4j/jobs-that-use-science/1, https://www.bradfordacademy.co.uk/wp-content/uploads/2019/10/CEIAG-in-the-Curriculum-Science.pdf, https://www.pearson.com/uk/educators/schools/subject-area/science/why-science-matters/your-future-in-stem-a-z.html More information here. As the central science, Chemistry opens doors to a range of STEM Field careers						
Two	Chemical changes	Reactivity of metals reactions with acids Electrolysis	Experimenting with chemical reactions in a systematic way and organising their results logically Mixing of reagents to explore chemical changes and/or products. investigate pH changes when a strong acid neutralises a strong alkali. Measure the pH of different acids at different concentrations. (HT only) Make order of magnitude calculations. (HT only)	Physical vs chemical changes. Acids can burn and eat material away Neutralisation means an acid breaking down A base/alkali inhibits the burning properties of an acid	At KS3 students have studied the mechanics of chemical reactions Students have also studied neutralisation reactions which builds directly into titration	Chemical changes links to the 3.1.12 Acids and bases (A-level only) topic in KS5.	Explaining how concentration and strength are linked.
SMSC & British	British values in science						

Values	Students following laboratory rules for the safety of all Discussions on how certain developments have affected moments in life.
Cultural Capital	Neutralisation reactions and how they are useful in everyday life. Uses of indicators. Chemical reactions in everyday life.
Career Link	https://www.bbc.co.uk/bitesize/tags/zjb8f4j/jobs-that-use-science/1, https://www.bradfordacademy.co.uk/wp-content/uploads/2019/10/CEIAG-in-the-Curriculum-Science.pdf, https://www.pearson.com/uk/educators/schools/subject-area/science/why-science-matters/your-future-in-stem-a-z.html More information here. As the central science, Chemistry opens doors to a range of STEM Field careers

Three	Organic Chemistry	The structure and properties of alkanes and alkenes Fractional Distillation and Cracking Complete and incomplete combustion	Using and deriving the general formula of a homologous series Predicting the properties of a compound Writing and balancing chemical equations	Students often confuse alkanes and alkenes	Students have previously looked at chemical equations as the rearrangements of atoms throughout KS3	At A-Level students will study organic chemistry in more detail, forming most of the content of Paper Two	Explaining the properties of organic compounds linking to their structure.

SMSC & British Values	British values in science The environmental impact of fossil fuels and crude oil use. Discussion of the benefits and disadvantages of the oil industry in the UK
Cultural Capital	The social, economic and environmental impact of the oil industry worldwide. A deeper understanding of how many modern materials is derived from oil.
Career Link	https://www.bbc.co.uk/bitesize/tags/zjb8f4j/jobs-that-use-science/1, https://www.bradfordacademy.co.uk/wp-content/uploads/2019/10/CEIAG-in-the-Curriculum-Science.pdf, https://www.pearson.com/uk/educators/schools/subject-area/science/why-science-matters/your-future-in-stem-a-z.html

	More information here. As the central science, Chemistry opens doors to a range of STEM Field careers
Four	Students have end of year exams and 2 weeks of work experience in this final section of the academic year. Consolidation of the KS4 programme of study **Revision and preparation for GCSE exams (**& Consolidation of this part of the KS4 programme of study) Revisit to subject knowledge from across the course & use of PLC to ensure that students have a good grasp of all aspects of the specification Use of retrieval quizzes and activities to identify gaps in SK and misconceptions Support students in developing summary notes, flash cards etc to aid retrieval of key facts Ensure that students have the necessary skills for effective revision Focus on past exam questions and papers – command words and application of knowledge Practice the application of knowledge that draws upon the practical aspects of the course Timed completion of questions to support with pace through the exam paper SLOP style activities to ensure that all are prepared for the aspects of maths that will be present on the exam papers