Long Term Plan: Chemistry Year 11

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 4 sets in each population. X/Y 2, 3 and 4 classes will be taught science content and will see a subject specialist teacher three times a fortnight

There are 2 data collection points for Y11

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	Chemical Analysis	Pure and impure substances Chromatography Gas Testing (Triple Only) Flame testing, ion testing and spectroscopy	Following written methods and flow charts Interpreting chromatograms and other experimental results Writing scientific methods Measuring and recording accurate results Safe use of laboratory	Students often confuse the results of the various ion tests. Students often describe spectroscopy as being more "accurate" or "Reliable" as opposed to more "Sensitive" or "Precise"	Students have studied the idea of pure and impure substances, mixtures vs compounds and separation techniques at KS3. This unit extends this by introducing deeper analysis - not just separating mixtures but identifying their components.	Organic Analysis is studied in further depth at A-Level, where students will look at more complex spectroscopic methods, such as IR and MS spectroscopy.	Students could be presented with complex mixtures or a number of different solutions and challenged to produce viable methods of identification.

			equipment and glassware. Presenting and interpreting data in both tabular and graphical form.				
SMSC & British Values	British values in science Safe working in the lab, and respect for others workspaces.						
Cultural Capital	The use of spectroscopic methods in real life applications, such as quality assurance and forensic investigation						
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	Organic Chemistry	The structure and properties of alkanes and alkenes Fractional Distillation and Cracking Complete and incomplete combustion (Triple Only) The structure and properties of alcohols, carboxylic acids, esters and polymers.	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						
Three	Using Resources	Finite and infinite resources Potable water and water treatment Life cycle assessments (Triple Only) Bioleaching and phytomining The use of alloys, polymers and composite materials The Harber Process	Safe use of laboratory equipment Interpreting data presented in tabular or graphical form Recording accurate date Simple calculations involving addition and subtraction Extended Writing Using data to evaluate and compare	The differences between potable and pure water	Students have previously studied the difference between finite and infinite resources, and this is extended in this unit; alongside the new concepts that are introduced.	At A-Level students will study processes such as the Harber Process in greater depth, and place it in its chemical and economical context.	Students could be tasked to carry out life cycle assessments of varying complexities
SMSC & British Values	British values in science The social, economic and environmental impact of modern products, including how individual actions can have an impact on the environment						

Cultural Capital	The social, economic, and environmental impact of modern products, including how individual actions can have an impact on the environment
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 wide range of STEM field careers
Four and Five	Supporting Revision – from 24/April Consolidation of the KS4 programme of study **Revision and preparation for GCSE exams** 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