

# Long Term Plan: Chemistry Year 11

**“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 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.				
<b>SMSC &amp; British Values</b>	<a href="#">British values in science</a> Safe working in the lab, and respect for others workspaces.						
<b>Cultural Capital</b>	The use of spectroscopic methods in real life applications, such as quality assurance and forensic investigation						
<b>Career Link</b>	<a href="https://www.bbc.co.uk/bitesize/tags/zjb8f4j/jobs-that-use-science/1">https://www.bbc.co.uk/bitesize/tags/zjb8f4j/jobs-that-use-science/1</a> , <a href="https://www.bradfordacademy.co.uk/wp-content/uploads/2019/10/CEIAG-in-the-Curriculum-Science.pdf">https://www.bradfordacademy.co.uk/wp-content/uploads/2019/10/CEIAG-in-the-Curriculum-Science.pdf</a> , <a href="https://www.pearson.com/uk/educators/schools/subject-area/science/why-science-matters/your-future-in-stem-a-z.html">https://www.pearson.com/uk/educators/schools/subject-area/science/why-science-matters/your-future-in-stem-a-z.html</a> More information <a href="#">here</a> .  As the central science, Chemistry opens doors to a range of STEM Field careers						
Two	Atmospheric Chemistry	The composition of the modern atmosphere and how this has changed from the formation of the Earth  Human impact on the atmosphere, including greenhouse gases, climate change and global warming.  The impact of major atmospheric pollutants on human	Use of timelines  Extended Writing  Reading for comprehension  Evaluating the accuracy of data  Using data to make predictions about the outcome of experiments  Interpreting data	Many students believe that oxygen is the most plentiful gas in the atmosphere, rather than Nitrogen.  Many students overestimate the concentration of carbon dioxide in the atmosphere  Many students confuse global warming with climate change	In KS3 students studied the atmosphere and discussed the impact of human activity on the climate. This unit builds on this by introducing a more analytical and quantitative approach to exploring human impact on the atmosphere and environment	At A-Level, students will study the impact of CFCs and the mechanism by which they have contributed to loss of ozone.	Students may be asked to compare interventions based on compromise between their environmental and economic impacts.

		health and the environment	presented in tabular or graphical form				
<b>SMSC &amp; British Values</b>	<a href="#">British values in science</a> The effects of climate change, how every day actions contribute to climate change and what interventions can be put in place to prevent climate catastrophe						
<b>Cultural Capital</b>	The effects of climate change, how every day actions contribute to climate change and what interventions can be put in place to prevent climate catastrophe						
<b>Career Link</b>	<a href="https://www.bbc.co.uk/bitesize/tags/zjb8f4j/jobs-that-use-science/1">https://www.bbc.co.uk/bitesize/tags/zjb8f4j/jobs-that-use-science/1</a> , <a href="https://www.bradfordacademy.co.uk/wp-content/uploads/2019/10/CEIAG-in-the-Curriculum-Science.pdf">https://www.bradfordacademy.co.uk/wp-content/uploads/2019/10/CEIAG-in-the-Curriculum-Science.pdf</a> , <a href="https://www.pearson.com/uk/educators/schools/subject-area/science/why-science-matters/your-future-in-stem-a-z.html">https://www.pearson.com/uk/educators/schools/subject-area/science/why-science-matters/your-future-in-stem-a-z.html</a>  More information <a href="#">here</a> .						
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 data  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
<b>SMSC &amp; British</b>	<a href="#">British values in science</a>						

<b>Values</b>	The social, economic and environmental impact of modern products, including how individual actions can have an impact on the environment
<b>Cultural Capital</b>	The social, economic, and environmental impact of modern products, including how individual actions can have an impact on the environment
<b>Career Link</b>	<p><a href="https://www.bbc.co.uk/bitesize/tags/zjb8f4j/jobs-that-use-science/1">https://www.bbc.co.uk/bitesize/tags/zjb8f4j/jobs-that-use-science/1</a>, <a href="https://www.bradfordacademy.co.uk/wp-content/uploads/2019/10/CEIAG-in-the-Curriculum-Science.pdf">https://www.bradfordacademy.co.uk/wp-content/uploads/2019/10/CEIAG-in-the-Curriculum-Science.pdf</a>, <a href="https://www.pearson.com/uk/educators/schools/subject-area/science/why-science-matters/your-future-in-stem-a-z.html">https://www.pearson.com/uk/educators/schools/subject-area/science/why-science-matters/your-future-in-stem-a-z.html</a></p> <p>More information <a href="#">here</a>.</p> <p>As the central science, Chemistry opens doors to a wide range of STEM field careers</p>
Four and Five	<p>Supporting Revision – from 24/April</p> <p>Consolidation of the KS4 programme of study</p> <p><b>Revision and preparation for GCSE exams</b></p> <p>Revisit to subject knowledge from across the course &amp; use of PLC to ensure that students have a good grasp of all aspects of the specification</p> <p>Use of retrieval quizzes and activities to identify gaps in SK and misconceptions</p> <p>Support students in developing summary notes, flash cards etc to aid retrieval of key facts</p> <p>Ensure that students have the necessary skills for effective revision</p> <p>Focus on past exam questions and papers – command words and application of knowledge</p> <p>Practice the application of knowledge that draws upon the practical aspects of the course</p> <p>Timed completion of questions to support with pace through the exam paper</p> <p>SLOP style activities to ensure that all are prepared for the aspects of maths that will be present on the exam papers</p>