

## Year 12 Chemistry Overview 2023-24

	Term 1	
<b>Unit Title</b>	Year 12 Chemistry	
<b>Approximate Number of Lessons</b>	28	
<b>Curriculum Content</b>	<ol style="list-style-type: none"> <li>Atomic Structure <ol style="list-style-type: none"> <li>Fundamental particles</li> <li>Mass number and isotopes</li> <li>Electron configuration</li> </ol> </li> <li>Amount of Substance <ol style="list-style-type: none"> <li>Relative atomic and molecular mass</li> <li>The mole and the Avogadro constant</li> <li>The ideal gas equation</li> <li>Empirical and molecular formula</li> <li>Balanced equations and associated calculations</li> <li>Required Practical 1</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>Bonding <ol style="list-style-type: none"> <li>Ionic, metallic, covalent and dative covalent bonding.</li> <li>Bonding and physical properties</li> <li>Shapes of simple molecules and ions</li> <li>Bond polarity</li> <li>Forces between molecules</li> </ol> </li> <li>Intro to Organic <ol style="list-style-type: none"> <li>Nomenclature</li> <li>Isomerism</li> </ol> </li> </ol>
<b>Links to prior learning</b>	GCSE Chemistry Units: C1 Atomic Structure and the Periodic Table, C2 Bonding, C3 Quantitative Chemistry, C7 Organic Chemistry.	
<b>Cultural Capital Opportunities</b>	<p><b>TED Talk</b> – How big is a mole? <a href="https://www.youtube.com/watch?v=TEI4jeETVmg&amp;t=16s">https://www.youtube.com/watch?v=TEI4jeETVmg&amp;t=16s</a></p> <p><b>Book</b> - Periodic Tales: The curious lives of the elements by Hugh Aldersey-Williams</p> <p><b>Catalyst article</b> – Diamond, more than just a gemstone <a href="https://www.stem.org.uk/system/files/elibrary-resources/2017/02/Diamond%20more%20than%20just%20a%20gemstone.pdf">https://www.stem.org.uk/system/files/elibrary-resources/2017/02/Diamond%20more%20than%20just%20a%20gemstone.pdf</a></p>	<p><b>Follow on Twitter:</b>  @RoySocChem  @chemistrynews</p>
<b>Assessment Focus</b>	<ol style="list-style-type: none"> <li>Transition Assessment</li> <li>Atomic Structure</li> <li>Amount of Substance</li> <li>Bonding</li> </ol>	
<b>Name of Knowledge Organiser/Link to Organiser</b>	Year 12 Chem Autumn Term – Chemistry Teams	

## Year 12 Chemistry Overview 2023-24

	Term 2	
<b>Unit Title</b>	Year 12 Chemistry	
<b>Approximate Number of Lessons</b>	24	
<b>Curriculum Content</b>	5. Alkanes <ul style="list-style-type: none"> <li>a. Fractional distillation of crude oil</li> <li>b. Modification of alkanes by cracking</li> <li>c. Combustion of alkanes</li> <li>d. Chlorination of alkanes</li> </ul> 6. Halogenoalkanes <ul style="list-style-type: none"> <li>a. Nucleophilic substitution</li> <li>b. Elimination</li> <li>c. Ozone depletion</li> </ul> 7. Redox <ul style="list-style-type: none"> <li>a. Oxidation, reduction and redox equations</li> </ul> 8. Periodicity <ul style="list-style-type: none"> <li>a. Classification</li> <li>b. Physical properties of period 3 elements</li> </ul> 9. Group 2, the alkaline earth metals	10. Group 7 <ul style="list-style-type: none"> <li>a. Trends in properties</li> <li>b. Uses of chlorine and chlorate (I)</li> <li>c. Required Practical 4</li> </ul> 11. Energetics <ul style="list-style-type: none"> <li>a. Enthalpy change</li> <li>b. Calorimetry</li> <li>c. Applications of Hess's Law</li> <li>d. Bond enthalpies</li> <li>e. Required Practical 2</li> </ul> 12. Kinetics <ul style="list-style-type: none"> <li>a. Collision theory</li> <li>b. Maxwell Boltzmann distribution</li> <li>c. Effect of temp, concentration, pressure and catalyst on rate</li> <li>d. Required Practical 3</li> </ul>
<b>Links to prior learning</b>	GCSE Chemistry Units: C1 Atomic Structure and the Periodic Table, C4 Chemical Changes, C5 Energy Changes, C6 Rate, C7 Organic Chemistry, C10 Using Resources.	
<b>Cultural Capital Opportunities</b>	<b>YouTube channel</b> – Periodic Videos <a href="https://www.youtube.com/channel/UCtESv1e7ntJaLJYKIO1FoYw">https://www.youtube.com/channel/UCtESv1e7ntJaLJYKIO1FoYw</a> <b>Movie</b> – An Inconvenient Truth (2006) <b>Pick a new book</b> - <a href="https://www.univ.ox.ac.uk/applying-to-univ/reading-bank/?category=maths-physical-life-sciences">https://www.univ.ox.ac.uk/applying-to-univ/reading-bank/?category=maths-physical-life-sciences</a>	
<b>Assessment Focus</b>	5. Intro to Organic, Alkanes and Halogenoalkanes 6. Redox, Group 2, Group 7 and Periodicity	
<b>Name of Knowledge Organiser/Link to Organiser</b>	Year 12 Chem Spring Term – Chemistry Teams	

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## Year 12 Chemistry Overview 2023-24

	Term 3	
<b>Unit Title</b>	Year 12 Chemistry	
<b>Approximate Number of Lessons</b>	22	
<b>Curriculum Content</b>	13. Equilibria <ul style="list-style-type: none"> <li>a. Chemical equilibria and Le Chatelier's Principle</li> <li>b. K<sub>c</sub> for homogeneous systems</li> </ul> 14. Alkenes <ul style="list-style-type: none"> <li>a. Structure, bonding and reactivity</li> <li>b. Addition reaction of alkenes</li> <li>c. Addition polymers</li> </ul> 15. Alcohols <ul style="list-style-type: none"> <li>a. Alcohol production</li> <li>b. Oxidation of alcohols</li> <li>c. Elimination</li> <li>d. Required Practical 5</li> </ul>	16. Organic Analysis <ul style="list-style-type: none"> <li>a. Identification of functional groups</li> <li>b. Required Practical 6</li> <li>c. Mass spectrometry</li> <li>d. Infra-red</li> </ul> 17. Revision and End of Year Assessments 18. Start Year 13 Content
<b>Links to prior learning</b>	GCSE Chemistry Units: C7 Organic Chemistry, C8 Chemical Analysis.	
<b>Cultural Capital Opportunities</b>	<b>Online courses</b> - Future Learn - <a href="https://www.futurelearn.com/subjects/science-engineering-and-maths-courses/chemistry">https://www.futurelearn.com/subjects/science-engineering-and-maths-courses/chemistry</a> <b>Book</b> – The Science of Chocolate by S. T. Beckett <b>Visit</b> – Cambridge Science Centre - <a href="https://cambridgesciencecentre.org/">https://cambridgesciencecentre.org/</a>	<b>Challenge:</b> <a href="https://edu.rsc.org/enrichment/uk-chemistry-">https://edu.rsc.org/enrichment/uk-chemistry-</a>
<b>Assessment Focus</b>	7. Energetics, Kinetics and Equilibrium 8. Alkenes, Alcohols and Organic Analysis 9. End of Year Assessment – Paper 1 & Paper 2	
<b>Name of Knowledge Organiser/Link to Organiser</b>	Year 12 Chem Summer Term – Chemistry Teams	