





The curriculum for this stage of students' education has been designed to ensure students understand how scientific methods and theories develop over time. Building on work done in Year 9 and 10, they will use representational, spatial, descriptive, computational and mathematical models to solve problems, make predictions and to develop scientific explanations and understanding. Students will appreciate the power and limitations of science and be able to consider ethical issues which may arise. They will be able to explain the technological applications of science; evaluate associated personal, social, economic and environmental implications; and make decisions based on the evaluation of evidence and arguments. Students will evaluate risks both in practical science and the wider societal context, while recognising the importance of peer review of results and of communicating results to a range of audiences.

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| <p><b>HALF TERM 1:</b> ENERGY CHANGES AND RATES OF CHANGE</p> <p><b>STUDENTS MUST KNOW:</b><br/>Monitoring Chemical Reactions, Exothermic and Endothermic reactions, <i>Calculating Bond energies</i>, Collision theory, Factors affecting the Rate of a Chemical reactions (Temperature, Concentration, Surface area, Catalysts), Rate graphs, Reversible Reactions and <i>Le Chateliers Principle</i>.</p> <p><b>RP 11 – Effect of concentration on the rate of reaction</b></p> <p><b>HOW THIS WILL BE ASSESSED:</b><br/>A Progress Test halfway through the topic to address misconceptions, followed by an assessment completed at the end of each topic.</p> | <p><b>HALF TERM 2:</b> ORGANIC CHEMISTRY</p> <p><b>STUDENTS MUST KNOW:</b><br/>Fractional distillation and cracking. Examples of Homologous Series, Alkenes and their Reactions, Alcohols and their reactions, Carboxylic Acids and their reactions, Esters, Why Carboxylic Acids are Weak acids, Addition and Condensation polymerisation, Structure of Amino Acids, Structure of DNA, Natural polymers.</p> <p><b>HOW THIS WILL BE ASSESSED:</b><br/>A Progress Test halfway through the topic to address misconceptions, followed by an assessment completed at the end of each topic.</p> | <p><b>HALF TERM 3:</b> CHEMICAL ANALYSIS AND CHEMISTRY OF THE ATMOSPHERE</p> <p><b>STUDENTS MUST KNOW:</b> What defines Purity and a Formulation, Paper chromatography and calculating R<sub>f</sub>, How the R<sub>f</sub> is used in analysis, Testing for Gases (Cl<sub>2</sub>, O<sub>2</sub>, CO<sub>2</sub> and H<sub>2</sub>), Flame tests, precipitate tests and flame emission spectroscopy. The Greenhouse Gases and their effect on Global warming and Climate change, Reducing Carbon footprints, Atmospheric pollutants and their effects on the environment.</p> <p><b>HOW THIS WILL BE ASSESSED:</b><br/>A Progress Test halfway through the topic to address misconceptions, followed by an assessment completed at the end of each topic.</p> |
| <p><b>HALF TERM 4:</b> USING RESOURCES</p> <p><b>STUDENTS MUST KNOW:</b></p> <ul style="list-style-type: none"> <li>Natural and synthetic resources. Renewable and Finite resources. Sustainable development. <i>Alternative Methods of metal extraction</i>. Reusing and Recycling materials, Life cycle assessments, Potable water and wastewater treatment.</li> </ul> <p><b>RP13- How to test and distil salt water</b></p> <p><b>HOW THIS WILL BE ASSESSED:</b><br/>A Progress Test halfway through the topic to address misconceptions, followed by an assessment completed at the end of each topic.</p>  | <p><b>HALF TERM 5:</b> REVISION</p> <p><b>STUDENTS MUST KNOW:</b></p> <ul style="list-style-type: none"> <li>How to apply their knowledge of the content learnt to exam style questions. Firstly looking back to Paper 1 content, reviewing topics 1-5. Then moving onto Paper 2 content, reviewing topics 6-10. As well as constantly reviewing required practicals and how these can be assessed in exams.</li> </ul> <p><b>HOW THIS WILL BE ASSESSED:</b><br/>External examinations in May/June.</p>   | <p><b>HALF TERM 5:</b> REVISION</p> <p><b>STUDENTS MUST KNOW:</b></p> <ul style="list-style-type: none"> <li>How to apply their knowledge of the content learnt to exam style questions.</li> </ul> <p><b>HOW THIS WILL BE ASSESSED:</b><br/>External examinations in May/June.</p>  |

Embedding this knowledge can be supported at home by completion of homework, reviewing topics found on BBC Bitesize (AQA Chemistry), GCSE pod and reading scientific articles in newspapers, magazines, scientific journals and periodicals. Books of Interest: Periodic Tales: The Curious Lives of the Elements (Paperback) Hugh Aldersey-Williams ISBN-10: 0141041455.



Also inspire your further studies with trips to science fairs, The Big Bang Show, Science Live or visit Universities where famous scientists made discoveries; for example the Rutherford Building at The University of Manchester. Also visit Science museums and exhibits or perhaps The Black Country Living Museum.