

### Curriculum Intent

Students develop:

- essential knowledge and understanding of different areas of the subject and how they relate to each other.
  - and demonstrate a deep appreciation of the skills, knowledge and understanding of scientific methods.
    - competence and confidence in a variety of practical, mathematical and problem solving skills.
  - their interest in and enthusiasm for the subject, including developing an interest in further study and careers associated with the subject.
- Understand how society makes decisions about scientific issues and how the sciences contribute to the success of the economy and society (as exemplified in 'How Science Works').

Practical work undertaken to support teaching of the content will serve to cover the requirements of the practical skills module (Module 1), which is assessed in the written examinations and through the Practical Endorsement.

### What do students *do* with this knowledge or these skills?

Students will use their skills to plan and undertake advanced level synthetic and analytical chemistry experiments safely and responsibly by completing the PAG.

They will use their knowledge to develop their problem solving skills by analysing and making conclusions from data.

Student will work collaborator together to complete a variety of tasks designed to stretch and challenge their skills and understanding of chemistry.

Outside of the lab, students will have a clearer understanding of how our world works, and the scientific process used to better humanity. They will be critical thinkers and be able to approach challenging situations logically and systematically.

### How does the KS5 curriculum build on that from KS4?

A level Chemistry studies the material world, and through chemistry we can describe and explain questions such as: "what happens when sugar dissolves in tea?"; "why is mercury a liquid at room temperature?"; "how do we make plastics?"; "what can we do about global warming?"; "how and why will I be affected if oil runs out?".

From baking a cake to recharging a mobile phone, chemistry is involved in everything we do; and our lives are inextricably influenced by many aspects of chemistry. Chemistry will continue to be at the forefront of responding to the needs of society; with chemists central to making advances in designing new materials, efficient energy use, drug development, and technology, to name but a few.

A level Chemistry courses cover a wide variety of basic concepts such as the structure of the atom; the interaction of matter and energy; how to control reactions; patterns in the Periodic Table; understanding carbon-based molecules.

### What new knowledge or skills are students taught?

Term	Year 12	Year 13
<b>Autumn</b>	Module 2 – Foundations in chemistry <ul style="list-style-type: none"> <li>• Atoms, compounds, molecules and equations</li> <li>• Amount of substance PAG 1.2, PAG 2.1</li> <li>• Acid-base and redox reactions</li> <li>• The periodic table and periodicity</li> <li>• Basic concepts</li> <li>• Hydrocarbons</li> </ul>	Module 5 - Physical chemistry and transition elements <ul style="list-style-type: none"> <li>• pH and buffers PAG 11.2</li> <li>• Enthalpy, entropy and free energy</li> <li>• Carbonyl compounds</li> <li>• Carboxylic acids and esters</li> <li>• Nitrogen compounds</li> </ul>
<b>Spring</b>	Module 3 – Periodic table and energy <ul style="list-style-type: none"> <li>• Electrons, bonding and structure</li> <li>• Group 2 and the halogens PAG 4.1</li> <li>• Qualitative analysis PAG 7.1</li> <li>• Enthalpy changes PAG 3.2</li> <li>• Reaction rates and equilibrium (qualitative) PAG 9.3</li> <li>• Alcohols and halo alkanes</li> <li>• Organic synthesis</li> </ul>	Module 6- Organic chemistry and analysis <ul style="list-style-type: none"> <li>• Redox and electrode potentials PAG 8.2</li> <li>• Transition elements</li> <li>• Polymers</li> <li>• Organic synthesis</li> <li>• Chromatography and spectroscopy (NMR)</li> </ul>
<b>Summer</b>	Module 4- Core organic chemistry <ul style="list-style-type: none"> <li>• Analytical techniques (IR and MS)</li> <li>• Reaction rates and equilibrium (quantitative) PAG 10.1</li> <li>• Aromatic compounds</li> </ul>	<ul style="list-style-type: none"> <li>• Revision &amp; GCE Examinations</li> </ul>

<p><b>Rationale for this sequencing</b></p>	<p>OCR A provides a flexible approach to teaching. The specification is divided into topics, each covering different key concepts of Chemistry. Teaching of practical skills is integrated with the theoretical topics and they are assessed through the written papers.</p> <p>For A level only, the Practical Endorsement will also support the development of practical skills.</p>
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### Additional support at home

<p><b>Additional reading</b> for enjoyment, enhancement and extension</p>	<ul style="list-style-type: none"> <li>• Lessons in Chemistry by Bonnie Garmus</li> <li>• Elemental by Tim James</li> <li>• Bad Science by Ben Goldacre</li> </ul>
<p><b>Online resources</b> to practice, consolidate and revise</p>	<ul style="list-style-type: none"> <li>• <a href="#">Physics and Maths Tutor</a></li> <li>• <a href="#">Cognito Resources</a></li> <li>• <a href="#">Save My Exams</a></li> </ul>
<p><b>Workbooks &amp; revision guides</b> to practice, consolidate and revise</p>	<ul style="list-style-type: none"> <li>• <a href="#">CGP Revision Guide &amp; Workbook</a></li> </ul>