



Curriculum Plan Chemistry

Intent:

We aim to provide students with a curriculum that develops their understanding of, and appreciation for, the world around them. As they discover more about their place, impact and role in the world, students will be able to make good choices on a personal level and to grow into responsible global citizens. We will also help students to develop practical skills so that they can safely use the methods and processes that help scientists to make new discoveries and develop new technologies.

Studying chemistry will help students to understand how chemical reactions work, such as those that cause pollution in the atmosphere. This will enable them to engage with a number of current issues such as climate change and also to appreciate the role of chemistry in our everyday lives, from household chemicals to fuels. Chemistry is also a gateway subject to various important and highly competitive careers, so we aim to teach students using evidence-based practice to help form the best possible foundations for each next step of their studies.

| Year | What will students learn? | Rationale | How will students be assessed? |
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| 7 | <ol style="list-style-type: none"> 1. Particles 2. Acids and alkalis 3. Elements, compounds and chemical reactions | <ol style="list-style-type: none"> 1. Particles consolidate KS2 and is a key foundation for other science topics across KS3, including diffusion in biology. 2. Acids and Alkalis gives students an opportunity to introduce practical science, while also linking to chemicals they have in their homes and gardens. 3. This is the core foundations of chemistry – that materials that students meet in their daily life and science lessons are all made of atoms, which can be arranged in mixtures or compounds with distinctive properties. This topic also formalises how chemists describe chemical reactions using equations. | Multiple choice assessment, mini quizzes and formal tests at the end of the particles and elements, compounds topics |
| 8 | <ol style="list-style-type: none"> 1a. Trends in the Periodic table 1b. Properties of bulk materials 2. Key chemical reactions | <ol style="list-style-type: none"> 1a. Introduces the Periodic table as a way of organizing elements and data analysis skills to describe the trends in the properties of elements in the same group | Multiple choice assessment at end of each sub topic and formal tests at the end of each topic. |

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| | | <p>1b. Describes how the properties of substances depend on whether the elements are metals or non-metals and how the atoms are arranged. This forms a foundation for later learning about types of bonding and structure.</p> <p>2. Building practical skills and developing student cognition of the way that the macroscopic chemistry can also be represented as microscopic, with particle diagrams, and symbolic representations as symbol equations. This topic initially focusses on the reactions of metals before introducing more general types of chemical reactions, such as combustion and thermal decomposition.</p> | |
| | KS3 omissions from the national curriculum | <p>From Chemical reactions: <input type="checkbox"/> what catalysts do.</p> <p>From Materials: <input type="checkbox"/> properties of ceramics, and composites (qualitative).</p> <p>From Earth and the atmosphere: <input type="checkbox"/> the composition of the Earth <input type="checkbox"/> the structure of the Earth <input type="checkbox"/> the rock cycle and the formation of igneous, sedimentary and metamorphic rocks</p> <p>Rationale – catalysts is a stand-alone topic that is more meaningful when students already understand collision theory and the role of activation energy in chemical reactions.</p> <p>The Earth structure and the rock cycle are not required for progression in chemistry learning so have not been prioritised.</p> | |
| 9 | <ol style="list-style-type: none"> 1. Atomic structure 2. The Periodic Table 3. Structure and bonding 4. Chemical changes | <p>The teaching order of the AQA GCSE specification has been adapted from 2021-22 to best accommodate topics that students find challenging, meaning they get a spiral curriculum where topics link both forward and backwards. This is particularly clear in the Quantitative chemistry topic, which has been broken down to introduce concepts where they are relevant to the rest of the theory – relative formula mass with balancing equations or concentration in moles alongside titrations as an example of neutralisation. However the bulk of quantitative chemistry has been delayed to Y10 as students tend to find it challenging. This allows their</p> | Multiple choice assessment at end of each sub topic and formal tests at the end of each topic. |
| 10 | <ol style="list-style-type: none"> 1. Chemical changes continued, including electrolysis 2. Energy changes in chemical reactions 3. Quantitative chemistry | | Multiple choice assessment at end of each sub topic and formal tests at the end of each topic. Paper 1 mock towards the end of Y10 |

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| | <ol style="list-style-type: none"> 4. Chemical analysis 5. Rate and extent of chemical change | <p>confidence in maths to increase, as well as their ability to link to a real-life concept.</p> <p>The content is largely in topics that match the textbooks students use in school and that students have access to an online version of. This supports students accessing work at home – either for homework or other remote learning circumstances. The topic order also matches the exam papers – all paper 1 content is taught before paper 2, to allow the use of un-adapted papers for assessments and to make it clear to student’s which topics they need to revise when preparing for their final exams.</p> <p>Students sitting Chemistry GCSE have slightly more content within these topics, but also more teaching time each week, so will not be in exactly the same place at the same time as combined science students, however the overall teaching sequence is shared by all students.</p> | |
| 11 | <ol style="list-style-type: none"> 1. Organic chemistry 2. Atmosphere 3. Using resources | | <p>Multiple choice assessment at end of each sub topic and formal tests at the end of each topic.</p> <p>Paper 1 mock in December</p> <p>Paper 2 mock in class around Easter.</p> |
| 12 | <ol style="list-style-type: none"> 1. Elements of Life 2. Developing fuels 3. Elements of the Sea 4. Ozone 5. What’s in a Medicine? 6. Chemicals in Industry | <p>We follow the OCR B (Salters) curriculum, following the textbook order, which has been designed in conjunction with the University of York to be a spiral curriculum, so topics are introduced within a context and then practiced later in a different relevant context.</p> | <p>Multiple choice assessment at end of each sub topic and extended exam question homework and formal tests at the end of each topic.</p> <p>Y12 mock in June</p> |
| 13 | <ol style="list-style-type: none"> 7. Polymers of life 8. Oceans 9. Developing Metals 10. Colour by Design | | <p>Multiple choice assessment at end of each sub topic and extended exam question homework and formal tests at the end of each topic.</p> <p>Mock exam in February</p> |