

Science Curriculum Sequencing Rationale

1a.	What are the key topics taught in Year 7? We teach the fundamentals of Science as 6 units – Cells, Particles, Energy, Bioenergetics, Chemical Reactions and Forces. These are knowledge based but with skills intertwined.
1b.	Why is this? We want students to build on their KS2 approach; extending student knowledge whilst developing a range of skills such as practical skills, analysis of data, evaluation, risk assessment and method writing. Successful progress made in these key topics will provide solid grounding for application of knowledge and skills to year 8 topics.
2a.	What order is this taught in and why? As listed above for 1a; We teach the course to allow for the development of ideas and where links can be made between specialisms eg. Energy leading to forces and energy in chemical reactions/particles leading to chemical reactions and rearrangement of these particles. Topics rotate through the 3 Science specialisms to maintain engagement for all students regardless of their own individual preferences.
3a.	How do we build on these topics and rationale in Year 8? We continue to develop the fundamentals taught in year 7, studying bespoke units that are based on specific careers which follow the KS3 National Curriculum. This approach supports students in developing their broader knowledge of Science and a deeper understanding of scientific concepts as well as an understanding of where they sit with potential career choices i.e. Farmer – develops understanding of chemical reactions to neutralisation of acidic soil.
3b.	What order is this taught in and why? We teach the course to allow for the development of ideas and where links can be made between specialisms eg. Lab Technician (elements and compounds) leading to Chemist (balancing equations). Topics rotate through the 3 Science specialisms to maintain engagement for all students regardless of their own individual preferences.
4a.	How do we build on these topics and rationale in Year 9? We continue to build on our fundamentals from year 7 as well as developing knowledge from year 8. Topics are still based on specific careers. From Spring 2, we teach, smaller units based on the 6 fundamental topics from year 7 that are developed from their prior learning in years 8 and 9. These will provide a level of confidence in understanding that can be drawn upon as they begin KS4. During summer term, student begin KS4 by studying the first Chemistry unit. This due to links that can be made between atomic structure and bonding to both Biology and Physics units to be taught in year 10.
4b.	What order is this taught in and why? We teach the course to allow for the development of ideas and where links can be made between specialisms eg. Energy leading to Optometrist (Colour and vision). Topics rotate through the 3 Science specialisms to maintain engagement for all students regardless of their own individual preferences. Recapping units based on the 6 fundamentals allows us to ensure that no student is left behind prior to the start of KS4. It provides the opportunity to revise current knowledge whilst narrowing the gap between KS3 and 4, sowing the seeds of some key vocabulary which will be met in the upcoming years.
5a.	Select one concept/theme you teach in your subject across more than one key stage How is this taught in each year? In year 7, students are taught that all matter is made up of particles and can describe their behaviour in solids, liquids and gases. Year 8 and 9 develop this idea to discuss particles as atoms and describe the sub-atomic particles involved. Changes of state are named and the concept of energy is introduced alongside the related physics unit. Chemical reactions are described in terms of elements and compounds and their rearrangement. Year 10 take this knowledge and learn how atoms can be joined together via covalent, ionic or metallic bonding. Quantitative Chemistry explains how mass is conserved and students learn to balance an equation. Year 11 applies context to this, for instance, how the atom breaks down during radioactivity and transfer across membranes.
5b.	How does this become progressively more challenging? Students begin by learning concepts and are then asked to apply these in 'real-life' situations with increasing complexity. Aspects of numeracy occur throughout but develop alongside the maths curriculum.

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	<p>Within KS4, students practice exam style questions every lesson which increase in difficulty as individual students increase in confidence and allows each student to challenge themselves on a lesson by lesson basis dependent on their perceived understanding of any given topic.</p>
6.	<p>What exam boards do you use in KS4 and KS5 and why? How does this link to your KS3 curriculum?</p> <p>In KS4 we follow the AQA Trilogy specification. The exam papers and mark schemes are accessible to students via Teams and helps to promote their independent working and self-regulation skills. We follow the AQA A Level Biology, Chemistry and Physics courses as well as Psychology and Sociology. These complement the GCSE. Students study a range of units which include a range of required practicals where skills are assessed by teachers, which provides an excellent opportunity to develop skills for further academic study or employment. AQA units build directly on the career based units taught in years 8 and 9 as well as skills taught throughout the 5 year course.</p>
6.	<p>What career opportunities does the study of your subject bring?</p> <p>Science has links with almost every career. It not only provides knowledge of how the world around us works, but teaches the practical, analytical, and evaluation skills required to be successful in all walks of life. Taking Science in further education demonstrates a level of academic ability which can lead to a wide range of careers such as the medical industry, research, manufacturing and architecture.</p>