

Rationale:

During Year 9 we aim to build on the knowledge and understanding of Chemistry gained during Key Stage 3, revisiting knowledge acquired and developing it into Key Stage 4 by starting with units which have a strong overlap with material covered in Years 7 and 8. This follows the philosophy of a '5 Year Key Stage 4' inherent in the current Programme of Study and National Curriculum for KS3 and 4 Science. (In other words, both the knowledge and skills directly gained at KS3 and those developed further during KS4 are tested during the GCSE exams taken at the end of Year 11).

At Key Stage 4 we follow the AQA Scheme of Learning, in common with Biology and Physics.

Students begin Year 9 by an introductory module covering the fundamental aspects of Chemistry that will underpin the content to follow. This includes topics on the history and model of the atom and picks up on the prior knowledge from KS3 on Elements, Compounds and Mixtures. It is followed by The Atmosphere and Sustainable Development in Year 9 – two topics that are very relevant and topical and have lots of real world applications, again picking up KS3 topics.

1. In the following Overview, the lesson numbers are approximate and will vary depending on the number of weeks in each term.
2. All in *italic* are for separate/ triple sciences only All in **bold** are for higher tier only

Reading in the curriculum: The Sciences offer many opportunities to develop and extend students' literacy skills. There is a large amount of new, subject-specific vocabulary, and so each unit includes a glossary which students will complete and learn during the unit. Students will use texts to find out information for themselves, using the functional layout of such texts, including index, contents and glossary sections of text books used in class, and also at home in an online format. Students will also review and connect information within topics, so knowledge organisers are provided for each topic.

Connected knowledge: Topics in the Sciences do not stand alone. Each topic connects to prior knowledge from primary school, other topics learnt or still to be learnt at this school both in the Sciences and in other subjects and also in the outside world. Connected knowledge is discussed in class, starting with the Context Summary which is shared with students at the start of each topic.

Diversity: Science belongs to everyone, regardless of background, and people from all walks of life contribute to its development and reap its benefits. This is reflected in the examples used in lessons and the Scientists whose work we consider.

Term / Length of Unit	Outline	Assessment	Home Learning	Resources	Knowledge/Skills End Points	Reading in the curriculum
<p>Year 9</p> <p>Autumn Term 1 & 2 9 lessons (plus assessments and FAR)</p>	<p><u>Chapter 1 Atomic Structure</u></p> <p>Students revisit ideas about elements, compounds and mixtures from KS3, and learn about the different models of the atom.</p> <p>Students also have the opportunity to use their practical skills in separating mixtures using a variety of techniques and using maths skills such as standard form.</p>	<p>There are 3 summative Science tests through the year, please see the poster in the Science tab of the Year 9 Blog for details. There are also a number of formative tests throughout the unit'</p>	<p>In the Sciences, Educake quizzes, based on current and previous topics, are set every Monday to be done by the following Monday in a Biology – Chemistry – Physics rotation. Further information is available in the Year 9 Blog'</p>	<p>SoL on science shared area, including powerpoints, details of practical investigations and associated risk assessments, worksheets, revision resources, homework booklet and test. Chemistry Student Book</p>	<p><u>Knowledge</u></p> <ul style="list-style-type: none"> Identifying elements, compounds and mixtures using formulae Describing elements, molecules and compounds in terms of atoms Explaining how and why mixtures can be separated. Describe how and why the atomic model has changed over time. Describe the current model of the atom including masses and charges of subatomic particles. <p><u>Skills</u></p> <ul style="list-style-type: none"> Evaluating strengths and weaknesses of different models Using significant figures 	<p>Glossary, context summary, knowledge organiser and guided reading tasks C1 part 1 Atomic structure Glossary</p>

<p style="text-align: center;"> Year 9 Spring Term 1 lessons (plus assessment and FAR) </p>	<p style="text-align: center;"><u>Chapter 9 The Atmosphere</u></p> <p>Students learn about how and why the composition of our atmosphere has changed including human activities on climate change and the steps that can be taken to reduce the impact. Students will also consider the steps that individuals and Governments can take to reduce the levels of greenhouse gases and our carbon footprint. Finally students will learn about the other types and issues of air pollution. Students will continue to develop their skills in critically analysing data and graphs.</p>	<p>There are 3 summative Science tests through the year, please see the poster in the Science tab of the Year 9 Blog for details. There are also a number of formative tests throughout the unit'</p>	<p>In the Sciences, Educake quizzes, based on current and previous topics, are set every Monday to be done by the following Monday in a Biology – Chemistry – Physics rotation. Further information is available in the Year 9 Blog'</p>	<p>SoL on science shared area, including powerpoints, details of practical investigations and associated risk assessments, worksheets, revision resources, homework booklet and test. Chemistry Student Book</p>	<p><u>Knowledge</u></p> <ul style="list-style-type: none"> Describe ideas about how the early atmosphere and processes that changed the amount of oxygen and carbon dioxide in our atmosphere Explanation of the greenhouse effect and how human activities and contributing to climate change Describe how emissions of greenhouse gases can be reduced and the limitations to these methods Describe the causes and effects of atmospheric pollutants. <p><u>Skills</u></p> <ul style="list-style-type: none"> Interpret evidence about the atmosphere Evaluate different theories 	<p>Glossary, context summary, knowledge organiser and guided reading task on evolution of the atmosphere C9 Atmosphere Glossary</p>
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<p>Year 9 Spring Term 2 6 lessons (plus assessments and FAR)</p>	<p><u>Chapter 4 Chemical Changes</u></p> <p>In the first half of this module, students will learn about the reactivity series and concepts around metal extractions and making salts. There is lots of practical work in this topic including an RP on making soluble salts.</p>	<p>There are 3 summative Science tests through the year, please see the poster in the Science tab of the Year 10 Blog for details. There are also a number of formative tests throughout the unit</p>	<p>In the Sciences, Educake quizzes, based on current and previous topics, are set every Monday to be done by the following Monday in a Biology – Chemistry – Physics rotation. Further information is available in the Year 10 Blog.</p>	<p>SoL on science shared area, including powerpoints, details of practical investigations and associated risk assessments, worksheets, revision resources, homework booklet and test. Chemistry Student Book</p>	<p><u>Knowledge</u></p> <ul style="list-style-type: none"> Explain oxidation and reduction in terms of oxygen and electrons including half equations Explain how extraction of metals depend on reactivity Reactions of metals with acids and salt production <p><u>Skills</u></p> <ul style="list-style-type: none"> RP Preparing a pure, dry sample of a soluble salt <p>Interpret and evaluate information about extraction processes</p>	<p>Glossary, context summary, knowledge organiser and guided reading tasks C4 Chemical changes glossary</p>
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<p>Year 9 Summer Term 1 7 lessons (plus assessment and FAR) Triple material to be taught to relevant classes</p>	<p><u>Chapter 10 Sustainable Development</u></p> <p>Students learn about the Earth's resources including water and how to use them in a sustainable way.</p> <p>Students also have hands-on experience with Required Practical on Analysis and Purification of water samples</p>	<p>There are 3 summative Science tests through the year, please see the poster in the Science tab of the Year 9 Blog for details. There are also a number of formative tests throughout the unit'</p>	<p>In the Sciences, Educake quizzes, based on current and previous topics, are set every Monday to be done by the following Monday in a Biology – Chemistry – Physics rotation. Further information is available in the Year 9 Blog'</p>	<p>SoL on science shared area, including powerpoints, details of practical investigations and associated risk assessments, worksheets, revision resources, homework booklet and test. Chemistry Student Book</p>	<p><u>Knowledge</u></p> <ul style="list-style-type: none"> • Give examples between finite and renewable resources, and the meaning of sustainability. • Distinguish between potable and pure water, and describe steps to produce potable water from fresh water, salt water and waste water. • Describe and evaluate alternative methods of metal extraction. • Describe the steps in a Life Cycle Assessment and methods to reduce waste and recycle resources <p><u>Skills</u></p> <ul style="list-style-type: none"> • Describe the procedures and safety precautions in the RP for analysing and purifying water samples 	<p>Glossary, context summary, knowledge organiser and guided reading tasks eg alternative methods of metal extraction C10 Sustainable development Glossary</p>
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<p>Year 9 Summer term 2 lessons (plus assessment and FAR)</p>	<p><u>Chapter 1 Periodic Table</u></p> <p>Students learn about how the atomic structure of an element dictates the position on the Periodic Table.</p> <p>Students will look at the scientists and ideas behind the design of the Periodic Table and use these ideas to make predictions about properties and reactivity. Students will learn about the properties and trends in the Periodic Table including metals and non – metals plus Groups 1, 7 and 0. Transition metals for Triple only</p>	<p>There are 3 summative Science tests through the year, please see the poster in the Science tab of the Year 10 Blog for details. There are also a number of formative tests throughout the unit</p>	<p>In the Sciences, Educake quizzes, based on current and previous topics, are set every Monday to be done by the following Monday in a Biology – Chemistry – Physics rotation. Further information is available in the Year 10 Blog.</p>	<p>SoL on science shared area, including powerpoints, details of practical investigations and associated risk assessments, worksheets, revision resources, homework booklet and test. Chemistry Student Book</p>	<p><u>Knowledge</u></p> <ul style="list-style-type: none"> Explain how the electron arrangement of an atom allows it to be placed in the Periodic Table. Describe the steps and scientists in the development of the Periodic Table. Comparing metals and non-metals including physical and chemical properties <p><u>Skills</u></p> <ul style="list-style-type: none"> Using data to make predictions <p>Practical work to investigate the properties of the different groups of the periodic table</p>	<p>Glossary, context summary, knowledge organiser and guided reading tasks C1 Part 2 Periodic table Glossary</p>
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