









YEAR 9 CURRICULUM INFORMATION – Chemistry

	Spring 1	Spring 2
What will students be learning?	<p><b>The Periodic Table</b> Students will learn about the development of the periodic table, including the work of Dalton, Newlands, and Mendeleev. Students should understand how each stage in the development of the periodic table was facilitated by new evidence becoming available. They should also be able to identify the importance of an inherent pattern to the elements and how this guided Mendeleev’s thinking.</p> <p>Students should also develop their understanding of electronic structures from <i>C1 Atomic structure</i> and apply this to the arrangement of the periodic table and the chemical properties of Group 0, Group 1, and Group 7 elements. They should also be able to identify trends in properties and reactivity, and higher-tier students should be able to explain these in terms of the electronic structure of the elements.</p> <p>Students should be able to compare these with the elements of Group 1, identify that some transition elements can form many different ions, and recognise that they are used as catalysts.</p>	<p><b>Structure and Bonding</b> Students will learn about the different types of bonding in substances. They should know that covalent bonding is the sharing of one or more pairs of electrons between non-metal atoms; ionic bonding involves a metal and non-metal atom, with the metal atom losing one or more electrons and the non-metal atom gaining one or more electron; and metallic bonding involves a delocalised sea of electrons surrounding the positive metal ions.</p> <p>Students will also learn how the bonding of a substance affects its bulk properties. They should be able to describe the difference in bonding and properties of giant ionic structures, simple covalent molecules, and giant covalent structures (including different arrangements of carbon). Students should understand that covalent, metallic, and ionic bonding is strong, but that it is how the particles interact (intermolecular forces) that determines properties such as melting point, boiling point, and electrical conductivity.</p> <p>Finally, students should learn about nanoparticles, their properties, and be able to explain how the surface area to volume ratio of nanoparticles is different to bulk material, and how this affects their uses.</p>
How will students be assessed?	C2 (The Periodic Table) Milestone	C3 (Structure and bonding) Milestone
Literacy – What keywords will be taught?	Element, Mendeleev, Electron, Halogens, Displace, Density, Conductor	Kinetic, Covalent, Ionic, Ion, Lattice, Electrostatic, Intermolecular forces, Alloy, Nanoparticles, Catalyst
What employability skills are being developed?	Skills such as investigative and analytical which can lead to careers as: Nuclear tester, Biochemical engineer, Chemical engineer	Skills such as investigative and analytical which can lead to careers as: Analytical technician, nanotoxicologist, Marketing development manager

<p>Wider Curriculum Links?</p>	<p>History of the atom History of the Periodic Table History of Scientists and their discoveries DT Materials and their properties</p>	<p>History of the atom History of the Periodic Table History of Scientists and their discoveries DT Materials and their properties</p>
<p>What useful websites are there for this topic?</p>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Free science lessons</p> </div> <div style="text-align: center;">  <p>Primrose Kitten</p> </div> <div style="text-align: center;">  <p>Seneca</p> </div> <div style="text-align: center;">  <p>BBC Bitesize</p> </div> </div>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Free science lessons</p> </div> <div style="text-align: center;">  <p>Primrose Kitten</p> </div> <div style="text-align: center;">  <p>Seneca</p> </div> <div style="text-align: center;">  <p>BBC Bitesize</p> </div> </div>
<p>What wider reading could be done for this topic?</p>	<p>Textbooks: AQA Chemistry for GCSE Combined Science: Trilogy (Oxford) Textbooks: AQA Chemistry for GCSE Separate Science (Oxford)</p>	<p>Textbooks: AQA Chemistry for GCSE Combined Science: Trilogy (Oxford) Textbooks: AQA Chemistry for GCSE Separate Science (Oxford)</p>
<p>What else can students be doing independently to develop their understanding of this topic?</p>	<p>Exam questions Numeracy practice</p>	<p>Exam questions Numeracy practice</p>