YEAR 9 CURRICULUM INFORMATION – Chemistry		
	Spring 1	Spring 2
What will students be learning?	**C2 - The Periodic Table** 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. Students should also develop their understanding of electronic structures from *C1 Atomic structure* 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. 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. **C13 - The Earth's atmosphere** Students will learn about the Earth's atmosphere. Students need to be able to describe the volcanic activity theory of the origin of the atmosphere, but they should be able to interpret evidence concerning other theories, and be able to evaluate them. To describe the history of the atmosphere students will need to have a sense of the timescales involved. Along with an understanding of the origins of the atmosphere, students should also understand how it has evolved over time. This	**C3 - Structure and Bonding** 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. 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. 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. **C12 - Chemical analysis** Students will look into pure substances and mixtures, analyse chromatograms, test for gases (such as hydrogen, oxygen, chlorine and carbon dioxide).

	includes both how the general composition of the atmosphere has changed and how the atmosphere is currently being affect by human activity. Students should be able to describe the human activities that are thought to cause global warming, and be able to explain some of the effects this has on the climate of the Earth. Students should also be able to explain the effect of other pollutants on the Earth, including carbon monoxide, sulfur dioxide, nitrogen oxides, and particulates.	
How will students be assessed?	C2 (The Periodic Table) Checkpoint C13 (The Earth's atmosphere) Checkpoint	C3 (Structure and bonding) Checkpoint
Literacy – What keywords will be taught?	Element, Mendeleev, Electron, Halogens, Displace, Density, Conductor Air, Oxygen, Carbon dioxide, Nitrogen, Sulfur dioxide, Volcanoes, Particulates, Ammonia, Acid rain, Photosynthesis, Global dimming, Combustion, Greenhouse effect, Global warming, Carbon monoxide, Nitrogen oxide	Kinetic, Covalent, Ionic, Ion, Lattice, Electrostatic, Intermolecular forces, Alloy, Nanoparticles, Catalyst Pure, Impure, Mixture, Formulation, Component, Chromatogram, Mobile phase, Stationary phase, Retention factor, Solvent, Solute, Substance, Glowing, Burning, Compound
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: Atmospheric Scientists, Meteorologists, National Weather Service, Climate change, Environmentalist, Climatologist, Renewable Energy Geoscientist, Environmental Lawyer, Climatologist, Renewable Energy Scientist, Geoscientist, Clean Car Engineer	Skills such as investigative and analytical which can lead to careers as: Analytical technician, nanotoxicologist, Marketing development manager Skills such as investigative and analytical which can lead to careers as: Chemical manufacturer, Chemical engineer, Criminal analyst, Pharmacologist, Toxicologist, Crime scene investigator
Wider Curriculum Links?	History of the atom History of the Periodic Table History of Scientists and their discoveries DT Materials and their properties	History of the atom History of the Periodic Table History of Scientists and their discoveries DT Materials and their properties

	Geography (Earth composition) Biology (Photosynthesis) Geography (Pollution)	Food (Use of food colouring dyes) Food (Use of E numbers in food) Maths (Interpreting data)
What useful websites are there for this topic?	 Free science lessons  Primrose Kitten  Seneca  BBC Bitesize	 Free science lessons  Primrose Kitten  Seneca  BBC Bitesize
What wider reading could be done for this topic?	Textbooks: AQA Chemistry for GCSE Combined Science: Trilogy (Oxford) Textbooks: AQA Chemistry for GCSE Separate Science (Oxford)	Textbooks: AQA Chemistry for GCSE Combined Science: Trilogy (Oxford) Textbooks: AQA Chemistry for GCSE Separate Science (Oxford)
What else can students be doing independently to develop their understanding of this topic?	Exam questions Numeracy practice Timescales	Exam questions Numeracy practice