

Year 9 Curriculum Chemistry – 2021-21

	Autumn Term		Spring Term		Summer Term	
	1	2	1	2	1	2
Key Concepts	New Technology in Chemistry		Turning Points in Chemistry		Detection in Chemistry	
National Curriculum Knowledge & Understanding	<p>Nanoparticles</p> <p>In this topic pupils will look at the applications of chemistry and learn about nanoparticles. They will be able to describe what a nanoparticle is, investigate their uses and what future problems they might impose by examining data and evidence. Pupils will carry out supporting practical work by investigating sunscreens.</p>	<p>Cars and the future</p> <p>In this topic pupils will build on their existing knowledge to deepen their understanding of air pollution, combustion, and alternatives to fossil fuels. Pupils will continue to incorporate aspects of chemistry such as chemical equations and types of chemical reactions such as combustion. They will use data sources to be able to make comparisons between advantages and disadvantages of</p>	<p>Changes in theories</p> <p>This topic is essential for pupils to understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review as they will be presented with historical evidence in the development of the structure of the atom while building on understanding of atoms, elements and compounds</p>	<p>Changes in theories</p> <p>This topic will continue with the themes of working scientifically while incorporating strands of chemistry such as the particle nature of matter, atoms, elements and compounds and the Periodic Table. There will be links to the Earth and its structure through the investigation of fossils to help pupils present reasoned explanations, including explaining data in relation to</p>	<p>Forensics</p> <p>Pupils will build on their previous knowledge of the particulate nature of matter and pure and impure substances and apply this to problem solving, whereby pupils will select, plan and carry out the most appropriate types of scientific enquires to test their predictions on separating substances. This will demonstrate to pupils how scientific techniques are incorporated into different careers</p>	<p>Forensics</p> <p>This topic will continue with the application of chemistry techniques to careers, while making links to chemical reactions and materials. Pupils will continue to deepen and embed understanding of natural and man-made polymers and their effects on the environment.</p>

		different fuels and types of cars.	from earlier KS3. They will also interpret observations and data to identify patterns, use observations and measurements to draw conclusions.	predictions and hypotheses.	such as forensics and laboratory work.	
Assessment	Assessed project comprising of unit test, practical assessment of skills in while investigating how well sunscreens work.	Assessed project comprising of an end of unit test, practical assessment of skills while investigating the combustion of different fuels.	Mid topic assessment	Assessed project comprising of an end of unit test, practical assessment of skills while investigating the formation of fossils.	Assessed project comprising of a unit test, practical assessment of skills while investigating separation techniques.	Assessed project comprising of an end of unit test, practical assessment of skills while investigating the reactivity series and properties of polymers.
Why this? Why now?	At this point pupils should already understand the particulate nature of matter from year 7 and atoms, elements, and compounds from year 8. They will now build on this by learning about nanoparticles and	Prior to this, pupils have studied chemical reactions, such as combustion, energetics in physics, materials and the Earth and the atmosphere. This unit will incorporate strands of each of these units and	Pupils should have a good understanding of atoms as they have previously studied them in year 7 in the particle model; in year 8 in atoms, elements, and compounds. However, they have not considered how we know	This topic will continue embedding how and why chemistry models have changed over time. This time, pupils will examine the historical development of the periodic table. They have basic knowledge of the	By now pupils should have a secure understanding of pure and impure substances and methods of separation. Pupils will now be given the opportunity to apply this understanding to make predictions,	This topic uses different aspects of chemistry from year 7 and 8. It depends on knowledge from atoms, elements and compounds and recycling in year 8 and nanoparticles from earlier in year 9. Pupils will continue

	<p>how they can change the properties of materials. Pupils mathematical skills should be developed enough by this stage to complete relevant calculations and conversions of units.</p>	<p>intertwine them so that pupils can apply the science to the modern world, while also applying concepts such as hybrid cars to the future.</p>	<p>about the structure of atoms and the subatomic parts of the atom. This module will focus on how scientific theories change. By this point pupils' skills should be developed enough for them to objectively evaluate what makes a good model and realise when newer models need to be proposed. This will enable them to study the history of the atom in more depth at KS4.</p>	<p>structure of the Periodic Table from year 8, but now they will learn the stages of its development. This knowledge will then be utilised and developed in greater depth at KS4. Pupils have previously studied fossils at KS2 and cross curricular links will be forged with inheritance and evolution in biology to show how explanations are modified to take into account new evidence.</p>	<p>while selecting which method to use. This will then be applied to modern day careers. Good practical planning and investigative skills are important to develop before progress in to KS4</p>	<p>developing their planning and investigative skills to allow them to progress further at KS4.</p>
<p>Skills & Characteristics</p>	<p>Resilience Being able to look at practical results, identify anomalies and carrying out repeats are all essential skills to build resilience</p> <p>Collaboration Lessons involve practical group work to improve lab skills and communication. Pupils understand the importance of discussion and peer review in the scientific community.</p> <p>Creativity Application of knowledge and logical thinking skills are integral to scientific investigation</p>					

Aspirations &
Careers

CEIAG

Medical Experience days: These events link with scientific content and bring 'real-life', everyday experiences into the classroom which specifically link to new technology in chemistry in the curriculum.

Careers Fairs: Provides an opportunity to students to practice presenting themselves in front of potential employers. This is also a great way for students to compare employers, and find out what area of science/ scientific skills they need to focus on in the classroom in order to be considered for future posts.

Work Experience: Students are introduced to different scientific skills by work colleagues during work experience which includes; the ability to problem solve, handling/ analysing data and communicate effectively. All skills which are used daily during day – to day lessons.

Cultural Capital

Pupils are encouraged to make links between current events, like using hybrid vehicles and climate change and our Chemistry learning in the classroom.

All pupils take advantage of our excellent links with the RSC and Newcastle University for off site visits and in school activities.

Extracurricular

Stem Club: Help to inspire, attract and develop STEM talents during school. The purpose of a STEM club is to raise student's engagement and achievement in these subject areas.