

Year 9 Curriculum Map : Chemistry

	Autumn	Spring	Summer
Assessment Objectives	AO1 - Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures (40%) AO2 - Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. (40%) AO3 - Analyse information and ideas to: interpret and evaluate; make judgements and draw conclusions; develop and improve experimental procedures. (20%)		
Unit Length	Topic: C7 Atoms, elements and compounds – 17 lessons	Topic: C8 – Chemical energy – 14 lessons	Topic: C9 – Sustainable development – 14 lessons
Key Learning Outcomes	<ol style="list-style-type: none"> 1. How are bonding and structure related to properties of substances? 2. What are the three types of chemical bonds? 3. How are ionic bonds formed? 4. What is the structure of ionic compounds? 5. How are covalent bonds formed? 6. What is the structure of covalent compounds? 7. How are metallic bonds formed? 8. <i>Progress assessment</i> 9. <i>Reteach and DIRT</i> 10. How can we test for common gases? 11. What are formulations? 12. What is chromatography? 13. <i>End of unit assessment</i> 14. <i>Reteach and DIRT</i> 	<ol style="list-style-type: none"> 1. How does a reaction occur? 2. What are endo and exothermic reactions? 3. How can we observe whether a reaction is endo or exothermic? 4. What is needed for a reaction to occur? 5. <i>Progress assessment</i> 6. <i>Reteach and DIRT</i> 7. How can the rate of reaction be changed? 8. How can we measure the change in a reaction rate? 9. <i>End of unit assessment</i> 10. <i>Reteach and DIRT</i> 	<ol style="list-style-type: none"> 1. How do we use Earth's resources? 2. What is sustainability? 3. What is potable water? 4. What are ceramics and composites and how do we use them? 5. What are polymers and how do we use them? 6. How are plastics affecting our oceans? 7. <i>Progress assessment</i> 8. <i>Reteach and DIRT</i> 9. How are metals extracted from the Earth? 10. How is electrolysis used to extract metals from their ores? 11. What is a carbon footprint and how can we reduce it? 12. What are life cycle assessments? 13. <i>End of unit assessment</i> 14. <i>Reteach and DIRT</i>
Prior knowledge	Year 4: <ul style="list-style-type: none"> - Compare and group materials together, according to whether they are solids, liquids or gases - Observe that some materials change state when they are heated or cooled, and measure or research the 	Year 6: <ul style="list-style-type: none"> - Beginning to understand the difference between reversible and irreversible change. Year 7: <ul style="list-style-type: none"> - The difference between chemical and physical changes 	Year 1: <ul style="list-style-type: none"> - Describe the simple physical properties of a variety of everyday materials. - Compare and group together a variety of everyday materials on the basis of their simple physical properties.

	<p>temperature at which this happens in degrees Celsius (°C)</p> <p>Year 7:</p> <ul style="list-style-type: none"> - The properties of the different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure - Changes of state in terms of the particle model - The concept of a pure substance - Simple techniques for separating mixtures - The identification of pure substances - The varying physical and chemical properties of different elements - Changes with temperature in motion and spacing of particles - Internal energy stored in materials <p>Year 8:</p> <ul style="list-style-type: none"> - The varying physical and chemical properties of different elements - The properties of metals and non-metals 	<ul style="list-style-type: none"> - Differences between atoms, elements and compounds - Chemical symbols and formulae for elements and compounds - Conservation of mass chemical reactions - Word equations <p>Year 8:</p> <ul style="list-style-type: none"> - Chemical symbols and formulae for elements and compounds - Chemical reactions as the rearrangement of atoms - Representing chemical reactions using formulae and using equations - Combustion, thermal decomposition, oxidation and displacement reactions - Defining acids and alkalis in terms of neutralisation reactions - The pH scale for measuring acidity/alkalinity; and indicators - Reactions of acids with metals to produce a salt plus hydrogen - Reactions of acids with alkalis to produce a salt plus water - What catalysts do 	<p>Year 2:</p> <ul style="list-style-type: none"> - Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. <p>Year 4:</p> <ul style="list-style-type: none"> - Recognise that environments can change and that this can sometimes pose dangers to living things. <p>Year 7:</p> <ul style="list-style-type: none"> - Simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography. - How organisms affect, and are affected by, their environment, including the accumulation of toxic materials. - Earth as a source of limited resources and the efficacy of recycling. - The production of carbon dioxide by human activity and the impact on climate. <p>Year 8:</p> <ul style="list-style-type: none"> - The interdependence of organisms in an ecosystem, including food webs and insect pollinated crops. - How organisms affect, and are affected by, their environment, including the accumulation of toxic materials.
<p>CEIAG Specific careers links</p>	<p>Research scientist Chemical engineering Forensic scientist Formulations chemist Toxicologist Pharmaceutical chemist</p>	<p>Laboratory technician Kinetics scientist Analytical chemist Research scientist Engineer</p>	<p>Environmental scientist Conservationist Plumber Materials scientists Water quality technician Polymer chemist Engineer Geochemist</p>

RRSA	Article 14: Freedom of thought, belief and religion Article 24: Health and the Health services Article 28: Right to education Article 29: Goals of education Article 27: Adequate standard of living	Article 14: Freedom of thought, belief and religion Article 24: Health and the Health services Article 28: Right to education Article 29: Goals of education Article 27: Adequate standard of living	Article 14: Freedom of thought, belief and religion Article 24: Health and the Health services Article 28: Right to education Article 29: Goals of education Article 27: Adequate standard of living
Cross curricular links	DT – Properties of materials Maths – Calculating Rf values, comparing boiling points and melting points Physics – Particle model of matter	Biology – Catalysts Maths – Rate equation and calculating gradient	Biology – Biodiversity, ecosystems Geography – Sustainability, carbon footprint DT – Properties of materials, polymers and composites, life cycle assessments Physics – Energy resources
Useful websites/ videos	Most expensive metals: https://www.youtube.com/watch?v=VBGYQ51my5c&t=18s Hindenburg crash: https://www.youtube.com/watch?v=CgWHbpMVQ1U Nylon in WW2: https://www.youtube.com/watch?v=lnUUNjYKm6w Eco-diamonds: https://www.youtube.com/watch?v=eQY_STUJCvg	Coolest chemical reactions: https://www.youtube.com/results?search_query=coolest+chemical+reactions Vinegar and bicarb rocket launch: https://www.youtube.com/results?search_query=coolest+chemical+reactions Catalytic converter theft: https://www.youtube.com/watch?v=o1YgP7ic84w	Where does sewage go?: https://www.youtube.com/watch?v=YW6GBciRHlg Carbon fibre: https://www.youtube.com/watch?v=1JpfOjKrw58 Brief history of plastic: https://www.youtube.com/watch?v=9GMbRG9CZJw Great pacific garbage patch: https://www.youtube.com/watch?v=9GMbRG9CZJw Ocean clean up: https://www.youtube.com/watch?v=O1EAeNdTFHU Carbon footprint: https://www.youtube.com/watch?v=9GMbRG9CZJw

			COP26: https://www.youtube.com/watch?v=12q3WcTJYgM
Wider Reading	Manufacture of 'eco-diamonds' Use of chlorine gas in WW2 Use of hydrogen gas in bombs Use of fertilisers to tackle global hunger crisis	Uses of neutralisation reactions Uses of endo/exo reactions Decomposition of hydrogen peroxide in the Kursk sinking	Importance of Nylon in WW2 Water shortages in the UK Impact of plastics in the ocean Great pacific garbage patch
Literacy Programme	<ul style="list-style-type: none"> • Decode it NOW • Guided practice/model answers • Sentence Starters • Writing strategies 	<ul style="list-style-type: none"> • Decode it NOW • Guided practice/model answers • Sentence Starters • Writing strategies 	<ul style="list-style-type: none"> • Decode it NOW • Guided practice/model answers • Sentence Starters • Writing strategies
Independent Learning Tasks	Mind-map revision homework Retrieval practice homework Knowledge Organiser practice Questions. Selective reading activity. Points grid ILT.	Mind-map revision homework Retrieval practice homework Knowledge Organiser practice Questions. Selective reading activity. Points grid ILT.	Mind-map revision homework Retrieval practice homework Knowledge Organiser practice Questions. Selective reading activity. Points grid ILT.