



All Saints' Catholic High School

Luceat lux Vestra

Subject: Chemistry and Trilogy

Stage: KS4

NB:

- Bold indicates separate science Chemistry content only
- Topics vary in length and may be delivered over multiple half terms, please see curriculum maps.
- ‘Bonding’ has been delivered to year 10 last year
- Future year groups will begin Energy in year 10

KS4: Yr 10 & 11	Unit 1- Atomic structure and the periodic table	Unit 2 - Bonding, structure, and the properties of matter	Unit 3 – Quantitativ e chemistry	Unit 4 – Chemical changes	Unit 5 – Energy changes	Unit 6 – The rate and extent of chemical change	Unit 7 - Organic chemistry	Unit 8 - Chemical analysis	Unit 9 - Chemistr y of the atmosphe re	Unit 10 - Using resources
	Year 9 half term 5									
Yr 10			<i>Yr 10 unit 1</i>	<i>Yr 10 unit 2</i>	<i>Yr 10 unit 3</i>	<i>Yr 10 unit 4</i>	<i>Yr 10 Unit 5</i>			
Yr 11						<i>Yr 11 Unit 1</i>	<i>Yr 11 unit 2</i>	<i>Yr 11 unit 3</i>	<i>Yr 11 unit 4</i>	<i>Yr 11 unit 5</i>

<p>Aim of Unit</p>	<p>The aim of this topic is to build on the Matter topic from KS3 and further develop the knowledge and understanding around the periodic table and the role it plays in our lives. It will also prepare pupils for the required disciplinary knowledge through the required practical activities.</p>	<p>The aim of this topic is to build on the Reactions topic from KS3 and further develop the knowledge and understanding around elements and molecules and the role it plays in our lives. It will also prepare pupils for the required disciplinary knowledge through the required disciplinary knowledge through the required practical activities.</p>	<p>The aim of this topic is to build on the mathematical aspects from the reactions topic from KS3 and further develop the knowledge and understanding around types of reactions and the role they play in our lives. It will also prepare pupils for the required disciplinary knowledge through the required practical activities.</p>	<p>The aim of this topic is to build on the chemical changes topic from KS3 and further develop the knowledge and understanding around reactions and the role they play in our lives. It will also prepare pupils for the required disciplinary knowledge through the required practical activities.</p>	<p>The aim of this topic is to build on the quantitative topic from KS4 and further develop the knowledge and understanding around different types of chemical reactions present in our lives. It will also prepare pupils for the required disciplinary knowledge through the required practical activities.</p>	<p>The aim of this topic is to build on the chemical changes topic from KS4 and further develop the knowledge and understanding around how reactions can be utilised in industry for profit and efficiency. It will also prepare pupils for the required disciplinary knowledge through the required</p>	<p>The aim of this topic is to build on the types of reactions topic from KS3 and further develop the knowledge and understanding around chemical structure, application and reactions. It will also prepare pupils for the required disciplinary knowledge through the required practical activities.</p>	<p>The aim of this topic is to build on the reactions topic from KS3 and further develop the knowledge and understanding around how chemical reactions can be used to infer information about certain substances, which has applications in a wide array of fields. It will also prepare pupils for the required disciplinary knowledge through the required practical activities.</p>	<p>The aim of this topic is to build on the Earth topic from KS3 and further develop the knowledge and understanding around climate and the earth's history. It will also prepare pupils for the required disciplinary knowledge through the required practical activities.</p>	<p>The aim of this topic is to build on the Earth topic from KS3 and further develop the knowledge and understanding around climate and earth's current resources and the role it plays in our lives and in our future. It will also prepare pupils for the required disciplinary knowledge through the</p>
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						practical activities.				required practical activities.
Composite Knowledge <i>(a task that requires several building blocks or components)</i>	Pupils will extend their understanding of key points and applications relating to atomic structure.	Pupils will extend their understanding of key points and applications relating to chemical bonding.	Pupils will extend their understanding of key points and applications relating to quantitative chemistry.	Pupils will extend their understanding of key points and applications relating to chemical changes.	Pupils will extend their understanding of key points and applications relating to energy changes in reactions.	Pupils will extend their understanding of key points and applications relating to reaction rates.	Pupils will extend their understanding of key points and applications relating to carbon-based chemistry.	Pupils will extend their understanding of key points and applications relating to the analysis of chemical reactions.	Pupils will extend their understanding of key points and applications relating to the chemistry of the earth's early and present atmosphere.	Pupils will extend their understanding of key points and applications relating to the use of natural resources.
Component Knowledge <i>(the building blocks that together, when known, allow successful performance)</i>	4.1.1.1 Atoms, elements and compounds 4.1.1.2 Mixtures 4.1.1.3 Development of the model of the atom (common content physics)	4.2.2.1 The three states of matter 4.2.2.2 State symbols 4.2.2.3 Properties of ionic compounds 4.2.2.4 Properties of small molecules	4.3.1.1 Conservation of mass and balanced chemical equations 4.3.1.2 Relative formula mass 4.3.1.3 Mass changes when a reactant or product is a gas	4.4.1.1 Metal oxides 4.4.1.2 The reactivity series 4.4.1.3 Extraction of metals and reduction 4.4.1.4 Oxidation and reduction in terms of	4.5.1.1 Energy transfer during exothermic and endothermic reactions 4.5.1.1 Required practical 4: Temperature changes 4.5.1.2 Reaction profiles	4.6.1.1 Calculating rates of reactions 4.6.1.2 Factors which affect the rate of chemical reactions 4.6.1.2 Required practical 5: Rates of reaction	4.7.1.1 Crude oil, hydrocarbons and alkanes 4.7.1.2 Fractional distillation and petrochemicals 4.7.1.3 Properties of hydrocarbons 4.7.1.4 Cracking and alkenes	4.8.1.1 Pure substances 4.8.1.2 Formulations 4.8.1.3 Chromatography 4.8.1.3 Required practical 6: Chromatography 4.8.2.1 Test for hydrogen	4.9.1.1 The proportions of different gases in the atmosphere 4.9.1.2 The Earth's early atmosphere	4.10.1.1 Using the Earth's resources and sustainable development 4.10.1.2 Potable water 4.10.1.2 Required practical 8: Water

<i>n</i> ce of a complex task)	4.1.1.4 Relative electrical charges of subatomic particles 4.1.1.5 Size and mass of atoms 4.1.1.6 Relative atomic mass 4.1.1.7 Electronic structure 4.1.2.1 The periodic table 4.1.2.2 Development of the periodic table 4.1.2.3 Metals and non-metals 4.1.2.4 Group 0 4.1.2.5 Group 1	4.2.2.5 Polymers 4.2.2.6 Giant covalent structures 4.2.2.7 Properties of metals and alloys 4.2.2.8 Metals as conductors 4.2.3.1 Diamond 4.2.3.2 Graphite 4.2.3.3 Graphene and fullerenes 4.2.4.1 Sizes of particles and their properties 4.2.4.2 Uses of nanoparticles	4.3.1.4 Chemical measurements 4.3.2.1 Moles (HT only) 4.3.2.2 Amounts of substances in equations (HT only) 4.3.2.3 Using moles to balance equations (HT only) 4.3.2.4 Limiting reactants (HT only) 4.3.2.5 Concentration of solutions (HT only) 4.3.3.1 Percentage yield 4.3.3.2 Atom economy 4.3.4 Using Concentrations to	electrons (HT only) 4.4.2.1 Reactions of acids with metals 4.4.2.2 Neutralisation of acids and salt production 4.4.2.3 Soluble salts 4.4.2.3 Required practical 1: Making salts 4.4.2.4 The pH scale and neutralisation 4.4.2.5 Titrations (chemistry only) 4.4.2.5 Required practical 2: Neutralisation 4.4.2.6 Strong and	4.5.1.3 The energy change reactions (HT only) 4.5.2.1 Cells and batteries 4.5.2.2 Fuel cells	4.6.1.3 Collision theory and activation energy 4.6.1.4 Catalysts 4.6.2.1 Reversible reactions 4.6.2.2 Energy changes and reversible reactions 4.6.2.3 Equilibrium 4.6.2.4 The effect of changing conditions on equilibrium (HT only) 4.6.2.5 The effect of changing concentration (HT only)	4.7.2.1 Structure and formulae of alkenes 4.7.2.2 Reactions of alkenes 4.7.2.3 Alcohols 4.7.2.4 Carboxylic acids 4.7.3.1 Addition polymerisation 4.7.3.2 Condensation polymerisation (HT only) 4.7.3.3 Amino acids (HT only) 4.7.3.4 DNA (deoxyribonucleic acid) and other naturally occurring polymers	4.8.2.2 Test for oxygen 4.8.2.3 Test for carbon dioxide 4.8.2.4 Test for chlorine 4.8.3.1 Flame tests 4.8.3.2 Metal hydroxides 4.8.3.3 Carbonates 4.8.3.4 Halides 4.8.3.5 Sulphates 4.8.3.5 Required practical 7: Identifying ions 4.8.3.6 Instrumental methods 4.8.3.7 Flame emissions spectroscopy	4.9.1.3 How oxygen increased 4.9.1.4 How carbon dioxide decreased 4.9.2.1 Greenhouse gases 4.9.2.2 Human activities which contribute to an increase in greenhouse gases 4.9.2.3 Global climate change 4.9.2.4 The carbon footprint and its reduction 4.9.3.1 Atmospheric	purification 4.10.1.3 Waste water treatment 4.10.1.4 Alternative methods of extracting metals (HT only) 4.10.2.1 Life cycle assessment 4.10.2.2 Ways of reducing the use of resources 4.10.3.1 Corrosion and its prevention 4.10.3.2 Alloys as useful materials 4.10.3.3 Ceramics, polymers and
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<p>Links to prior & future learning</p>	<p>pupils for continuing chemistry at KS5 in A level units such as atomic structure. It offers opportunities to explore Stem careers such as in research and nuclear sectors.</p>	<p>pupils for continuing chemistry at KS5 in A level units such as bonding. It offers opportunities to explore other areas of physical chemistry such as material science.</p>	<p>pupils for continuing chemistry at KS5 in A level units such as thermodynamics.</p>	<p>pupils for continuing chemistry at KS5 in A level units such as equilibria. It offers opportunities to explore Stem careers such as in research and in organic chemistry.</p>	<p>pupils for continuing chemistry at KS5 in A level units such as thermodynamics and energetics. It offers opportunities to explore Stem careers with a large cross over with physics.</p>	<p>pupils for continuing chemistry at KS5 in A level units such as rate equations. It offers opportunities to explore Stem careers such as in research and chemical production.</p>	<p>pupils for continuing chemistry at KS5 in A level units such as inorganic and advanced organic chemistry. It offers opportunities to explore Stem careers such as in research and manufacture.</p>	<p>pupils for continuing chemistry at KS5 in A level units such as chemical testing. It offers opportunities to explore Stem careers such as forensics.</p>	<p>pupils for continuing chemistry at KS5 in A level units such as chemical composition of the earth. It offers opportunities to explore Stem careers such as in renewable and non-renewable energy resources.</p>	<p>opportunities to explore Stem careers such as in resource allocation involving renewable resources, as in unit 9, with further applications to climate science.</p>
<p>Assessment Task</p>	<p>Atomic topic assessment (Foundation or Higher). H/W quiz on SMH every week to retain</p>	<p>Bonding topic assessment (Foundation or Higher). H/W quiz on SMH every week to retain knowledge</p>	<p>Quantitative chemistry topic assessment (Foundation or Higher). H/W quiz on SMH every week to retain knowledge (Interrupt the</p>	<p>Chemical changes topic assessment (Foundation or Higher). H/W quiz on SMH every week to retain knowledge</p>	<p>Energy changes topic assessment. (Foundation or Higher). H/W quiz on SMH every week to retain knowledge (Interrupt</p>	<p>Rates topic assessment (Foundation or Higher). H/W quiz on SMH every week to retain</p>	<p>Organic topic assessment (Foundation or Higher). H/W quiz on SMH every week to retain knowledge (Interrupt the forgetting curve). Formative</p>	<p>Chemical analysis topic assessment (Foundation or Higher). H/W quiz on SMH every week to retain knowledge (Interrupt</p>	<p>Chemistry of the atmosphere topic assessment (Foundation or Higher). H/W quiz on SMH every</p>	<p>Using resources topic assessment (Foundation or Higher). H/W quiz on SMH every week to</p>

