

AQA GCSE Chemistry – Trilogy & Separate Year 11 Curriculum Map



**Notre Dame
Catholic College**

YEAR 11	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Curriculum Content	<p>5.6 Understand the Extent and rate of chemical change</p> <p>Component 1: Identify ways of speeding up reactions and use collision theory and ideas about activation energy to make predictions.</p> <p>Component 2: Explore reversible reactions and use Le Chatelier's principle to predict the effects of changing temperature, pressure and concentration on equilibrium systems.</p> <p>Component 3: Identify variables and hazards in an investigation.</p> <p>Component 4: Plan and carry out investigations to test different hypotheses.</p> <p>Component 5: Recognise and describe patterns and trends in data</p> <p>Component 6: Use models and data to make predictions and communicate findings and reasoned conclusions.</p>	<p>5.7 Understand the chemistry of Carbon (Organic Chemistry)</p> <p>Component 1: Describe how fractional distillation and cracking of crude oil is carried out to produce fuels.</p> <p>Component 2: Identify and describe the difference between alkanes and alkenes.</p> <p>Component 3: Recognise how organic molecules can be modified to produce new and useful materials such as polymers.</p>	<p>5.8 Understand how scientists use Chemical analysis to detect specific chemicals</p> <p>Component 1: Describe what is meant by 'pure substances' and how they can be distinguished from mixtures.</p> <p>Component 2: Investigate and use instrumental methods to identify substances.</p> <p>Component 3: Carry out and describe the different tests used to test gases such as hydrogen, oxygen carbon dioxide and chlorine</p>	<p>5.9 Understand the Chemistry of the atmosphere</p> <p>Component 1: Describe how the composition of gases has changed from earth's early atmosphere.</p> <p>Component 2: Explain why data needed to answer scientific questions may be uncertain, incomplete or unavailable.</p> <p>Component 3: Explore the way the atmosphere has changed over geological timescales.</p> <p>Component 4: Evaluate the environmental implications of greenhouse gas emissions and other pollutants.</p> <p>Component 5: Explore the use of computer models to make predictions.</p> <p>Component 6: Evaluate the quality of evidence in reports about global climate change and learn how peer review works.</p>	<p>5.10 Understand aspects of sustainable development in using earth's resources</p> <p>Component 1: Investigate what is required to produce potable water and to treat waste water.</p> <p>Component 2: Consider alternative methods to extract a metal from low-grade ores that avoid the environmental impact of mining.</p> <p>Component 3: Compare the impact of products on the environment from the raw materials through to their disposal.</p> <p>Component 4: Consider the reusing, recycling or reducing of materials to sustain raw materials and have less impact on the environment.</p>	
Prior knowledge and skills (from previous year / key stage)	<p>Students will be aware of the terms 'rate of reaction, product, reactant, particles'</p> <p>They will be able to name signs that a chemical reaction has happened and the energy changes that happen during reactions.</p>	<p>Students will be aware that crude oil is a fossil fuel and is made from the remains of dead plants and animals.</p> <p>Students will be aware of different fuels and energy resources.</p> <p>Students will be aware that distillation is a method of separating a mixture</p>	<p>Students will be aware of what mixtures are and how they can be separated.</p> <p>They will be able to interpret results to show that substances are produced- e.g Acids using Indicator solutions.</p> <p>Pupils will be able to name the test for oxygen, hydrogen and carbon dioxide.</p>	<p>Students will be aware of the composition of the atmosphere and evolution of the atmosphere.</p> <p>They will be able to describe the effects that human activities have on the atmosphere and ways to reduce these effects.</p>	<p>Students will be aware of the different properties that materials have and how they are used.</p> <p>They will be able to describe how materials can be recycled and reused and the impact that using materials can have on the planet.</p>	

<p>Core Knowledge Organiser content</p>	<p>Rates of reaction Factors affecting rate of reaction Measuring rate of reaction Rates experiments Rate of reaction graphs Reversible reactions Le Chatelier's principle</p>	<p>Hydrocarbons Fractional distillation Uses of and cracking of crude oil Alkenes Reactions of alkenes Addition polymers Alcohols Carboxylic acids Condensation polymers Naturally occurring polymers</p>	<p>Purity and formulations Paper chromatography Tests for gases and anions Tests for cations Flame emission spectroscopy</p>	<p>The evolution of the atmosphere Greenhouse gases and climate change Carbon footprints Air pollution</p>	<p>Ceramics, composites and polymers. Properties of materials Corrosion Finite and renewable resources Reuse and recycling Life cycle assessments Potable water Waste water treatment Th Haber process NPK fertiliser</p>	
<p>Assessment Objectives</p>	<p>AO1: Demonstrate knowledge and understanding of: 1) scientific ideas 2) scientific techniques and procedures. AO2: Apply knowledge and understanding of: 1) scientific ideas 2) scientific enquiry, techniques and procedures. AO3: Analyse information and ideas to: 1a) interpret 1b) evaluate 2a) make judgements 2b) draw conclusions 3a) develop experimental procedures 3b) improve experimental procedures.</p>	<p>AO1: Demonstrate knowledge and understanding of: 1) scientific ideas 2) scientific techniques and procedures. AO2: Apply knowledge and understanding of: 1) scientific ideas 2) scientific enquiry, techniques and procedures. AO3: Analyse information and ideas to: 1a) interpret 1b) evaluate 2a) make judgements 2b) draw conclusions 3a) develop experimental procedures 3b) improve experimental procedures.</p>	<p>AO1: Demonstrate knowledge and understanding of: 1) scientific ideas 2) scientific techniques and procedures. AO2: Apply knowledge and understanding of: 1) scientific ideas 2) scientific enquiry, techniques and procedures. AO3: Analyse information and ideas to: 1a) interpret 1b) evaluate 2a) make judgements 2b) draw conclusions 3a) develop experimental procedures 3b) improve experimental procedures.</p>	<p>AO1: Demonstrate knowledge and understanding of: 1) scientific ideas 2) scientific techniques and procedures. AO2: Apply knowledge and understanding of: 1) scientific ideas 2) scientific enquiry, techniques and procedures. AO3: Analyse information and ideas to: 1a) interpret 1b) evaluate 2a) make judgements 2b) draw conclusions 3a) develop experimental procedures 3b) improve experimental procedures.</p>	<p>AO1: Demonstrate knowledge and understanding of: 1) scientific ideas 2) scientific techniques and procedures. AO2: Apply knowledge and understanding of: 1) scientific ideas 2) scientific enquiry, techniques and procedures. AO3: Analyse information and ideas to: 1a) interpret 1b) evaluate 2a) make judgements 2b) draw conclusions 3a) develop experimental procedures 3b) improve experimental procedures.</p>	
<p>Vocabulary / Key Subject Terminology</p>	<p>Activation Energy Enzymes Closed System Dynamic Equilibrium Le Chatelier's Principle Turbidity Catalyst</p>	<p>Finite Resource Biomass Hydrocarbon Displayed Formula Homologous Series Alkanes Saturated Fractional Distillation Fraction Complete Combustion Incomplete Combustion Flammability Viscosity Cracking Alkenes Unsaturated Functional Group Addition Reaction Hydrogenation Hydration Alcohols Carboxylic Acids Esters Monomer</p>	<p>Pure Substance Formulation Cation Anion Precipitate Compound Element Impure Melting Point Mixture Chromatography Stationary Phase Mobile Phase Chromatogram Rf Value</p>	<p>Atmosphere Carbon Footprint Fossil Fuels Sulfur Impurities Greenhouse Gases Global Dimming Incomplete Combustion Nitrogen Oxides Particulate</p>	<p>Finite Resource Renewable Resource Sustainable Development Life Cycle Assessment Potable Water Desalination Ore Alloy Corrosion Rusting Sacrificial Protection Bioleaching Leachate Leaching Phytomining Thermosetting Polymer Thermosoftening Polymer</p>	

		Polymer Addition Polymerisation Condensation Polymerisation Amino Acids Proteins Carbohydrates Nucleotide				
Assessment 1	Teacher assessment: Required practical	Teacher assessment: Extended written task	Teacher assessment: Required practical	Teacher assessment: Extended written task	Teacher assessment: Extended written task	
Assessment 2	End of Unit test	End of Unit test	End of Unit test	End of Unit test	End of Unit test	
Cross Curricular Links with other Faculties	History- Fritz Haber and use of gases in concentration camps. Biology- Use of enzymes in reactions. Food technology- Use of enzymes in food production and washing powder.	Biology- Structure and use of biological molecules. Food Technology- Use of esters in food production. DT- Use of materials, development of new materials. Geography- Use of plastics and the problems this creates.	Food technology- Detection of food colourings.	Geography- Climate change, impact of human activity on the earth.	Geography-Sustainability, recycling, impact of human activity on the planet. DT_Materials, use of materials, development of new materials.	
Extra-Curricular Offer	After school revision?/STEM club/Outreach	After school revision?/STEM club/Outreach	After school revision?/STEM club/Outreach	After school revision?/STEM club/Outreach	After school revision?/STEM club/Outreach	
Time Allocation	12 hours (including assessment and feedback)	10 hours (including assessment and feedback)	8 hours (including assessment and feedback)	8 hours (including assessment and feedback)	10 hours (including assessment and feedback)	