

Term	<p style="text-align: center;">INTENT</p> <p style="text-align: center;"><u>OCR GCSE (9-1) Chemistry A (Gateway Science) J248 Specification</u></p>	<p style="text-align: center;">IMPLEMENTATION</p>	<p style="text-align: center;">IMPACT</p>
	<p style="text-align: center;">Substantive Knowledge</p> <p style="text-align: center;">This is the specific, factual content for the topic, which should be connected into a careful sequence of learning.</p>	<p style="text-align: center;">Disciplinary Knowledge (Skills)</p> <p style="text-align: center;">This is the action taken within a particular topic in order to gain substantive knowledge.</p>	<p style="text-align: center;">Assessment opportunities</p> <p style="text-align: center;">What assessments will be used to measure student progress? Evidence of how well students have learned the intended content.</p>
<p>Autumn Term Y11 Term 1</p>	<p>C5.1 Monitoring Chemical reactions.</p> <p>This topic tackles the relationship of moles to the concentration of a solution and the volume of a gas. It also tackles the calculation of the mass of a substance in terms of its molarity. The topic then moves on to look at using equations to make predictions about yield by calculations and to calculate atom economy.</p> <ul style="list-style-type: none"> • Calculating theoretical yields • Calculating % yields and atom economies • Choosing reaction pathways • Calculation moles in solutions • Performing a titration • Molar gas volumes 	<ul style="list-style-type: none"> • Introduction of limiting reactant • Calculation of theoretical yields using moles • Revision calculating of RFM • Knowledge of formula for percentage yield • Introduction of atom economy • Comparison between the two to measure efficiency of a chemical reaction. • Knowledge of formula for percentage yield • Introduction of atom economy • Comparison between the two to measure efficiency of a chemical reaction. • Looking at reaction pathway, using ethanol as example By hydration or fermentation. • Introduction to calculating concentration in solutions, either g/dm³ or mol/dm³ • Explanation of a titration • Practical task, acid-base titration • Students to be able to name chemical equipment- burette, pipette, indicator, conical flask, retort stand, boss and clamp. 	<p>In class teacher assessment through Q & A</p> <p>Knowledge recall activity</p> <p>Homework to develop fluency, problem solving, reasoning and mastery.</p> <p>Teacher assessment during lesson</p> <p>End of C5.1 test</p> <p>End of Year assessments</p>

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Autumn Term Y11 Term 2	C5.2 Controlling reactions. <ul style="list-style-type: none"> The rate and yield of a chemical reaction can be altered by changing the physical conditions. Explain meaning of rate of reaction. Interpretation of rate of reaction graphs. 	<ul style="list-style-type: none"> Introduction to rates of reaction. Factors affecting the rate of reaction: Temp, concentration, particle size and use of catalysts. Drawing concentration time graphs Drawing tangents to calculate rate. Practical on temperature change Introduction to inversely proportional graphs Practical on Concentration-Thiosulphate with acid expt Demo particle size -Marble chips and acid expt Graph drawing measuring rate- comparing particle size and rate. Practical finding a good catalyst- Hydrogen peroxide evolution of oxygen. Biological catalysts, use of enzymes. 	In class teacher assessment through Q & A Knowledge recall activity Homework to develop fluency, problem solving, reasoning and mastery Teacher assessment during lesson End of C5.2 test To be included in End of Year assessments
	<ul style="list-style-type: none"> Factors affecting rates of reaction. Temperature Concentration Surface area Catalysts 		
Autumn Term Y11 Term 2	C5.3 Equilibria In a reaction, when the rate of the forward reaction equals the rate of the backwards reaction, the reaction in a closed system is said to be in equilibrium.	<ul style="list-style-type: none"> Meaning of term reversible, forward and backward reaction. Explanation of Term water of crystallisation. How eqm position is changed by temperature, pressure and concentration Le Chatelier's Principle- Industrial processes Production of ethanol-Choosing reaction pathway. 	In class teacher assessment through Q & A Knowledge recall activity Homework to develop fluency, problem solving, reasoning and mastery.
	<ul style="list-style-type: none"> Reversible reactions Dynamic equilibria Le Chatelier's principle Optimum conditions 		

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			<p>Teacher assessment during lesson</p> <p>End of unit C5 test</p> <p>To be included in End of Year assessments</p>
<p>Spring Term Y11 Term 1</p>	<p>C6 Global Challenges</p>	<ul style="list-style-type: none"> compare the industrial production of fertilisers with laboratory syntheses of the same products. recall the importance of nitrogen, phosphorus and potassium compounds in agricultural production. describe the industrial production of fertilisers as several integrated processes using a variety of raw materials. explain the importance of the Haber process in agricultural production. Explain the importance of the contact process. explain, using the position of carbon in the reactivity series, the principles of industrial processes used to extract metals, including extraction of a non-ferrous metal. explain why and how electrolysis is used to extract some metals from their ores. Biological extraction of metals- Bioleaching and phytoextraction. describe the composition of some important alloys in relation to their properties and uses. describe the process of corrosion and the conditions which cause corrosion. 	<p>In class teacher assessment through Q & A</p> <p>Knowledge recall activity</p> <p>Homework to develop fluency, problem solving, reasoning and mastery.</p> <p>Teacher assessment during lesson</p> <p>End of 6.1 test</p> <p>To be included in End of Year assessments</p> <p>In class teacher assessment through Q & A</p> <p>Knowledge recall activity</p>
	<p>C6.1 Improving processes and product. Know the role of fertilisers. Looking at industrial processes. Haber and contact process. Manufacture of alcohol. Extraction of metals Properties of metals Looking at composites</p>		

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			<p>Homework to develop fluency, problem solving, reasoning and mastery.</p> <p>Teacher assessment during lesson</p> <p>End of unit C6.2 test</p> <p>To be included in End of Year assessments</p>
		<ul style="list-style-type: none"> explain how mitigation of corrosion is achieved by creating a physical barrier to oxygen and water and by sacrificial protection. compare quantitatively the physical properties of glass and clay ceramics, polymers, composites and metals. explain how the properties of materials are related to their uses and select appropriate materials given details of the usage required. Knowledge of recycling materials. 	
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<p>Spring Term Y11 Term 2</p>	<p>C6.2 Organic Chemistry</p>	<ul style="list-style-type: none"> recognise functional groups and identify members of the same homologous series. name and draw the structural formulae, using fully displayed formulae, of the first four members of the 	<p>In class teacher assessment through Q & A</p> <p>Knowledge recall activity</p>
	<p>Introduction to the alkanes Introduction to the alkenes Looking at alcohols Looking at carboxylic acids</p>		

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	<p>Separation of alkanes and cracking Polymerisation Producing electricity using chemistry</p>	<p>straight chain alkanes, alkenes, alcohols and carboxylic acids.</p> <ul style="list-style-type: none"> • predict the formulae and structures of products of reactions of the first four and other given members of the homologous series of alkanes, alkenes and alcohols. • combustion; addition of bromine and hydrogen across a double bond; oxidation of alcohols to carboxylic acids using potassium manganate (VII). • describe the separation of crude oil by fractional distillation. • describe the fractions as largely a mixture of compounds of formula C_nH_{2n+2} which are members of the alkane homologous series. • recall that crude oil is a main source of hydrocarbons and is a feedstock for the petrochemical industry. • describe the production of materials that are more useful by cracking. • explain how modern life is crucially dependent upon hydrocarbons and recognise that crude oil is a finite resource. • recall that a chemical cell produces a potential difference until the reactants are used up. • evaluate the advantages and disadvantages of hydrogen/oxygen and other fuel cells for given uses. 	<p>Homework to develop fluency, problem solving, reasoning and mastery.</p> <p>Teacher assessment during lesson</p> <p>End of 6.1 test</p> <p>To be included in End of Year assessments In class teacher assessment through Q & A</p> <p>Knowledge recall activity</p> <p>Homework to develop fluency, problem solving, reasoning and mastery.</p> <p>Teacher assessment during lesson</p> <p>End of unit C6.2 test</p> <p>To be included in End of Year assessments</p>
	<p>Earth Systems</p>		

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<p>Summer Term Y11 Term 2</p>	<p>knowledge of how the composition of the atmosphere has changed over time.</p>	<ul style="list-style-type: none"> • interpret evidence for how it is thought the atmosphere was originally formed. • describe how it is thought an oxygen-rich atmosphere developed over time. • describe the greenhouse effect in terms of the interaction of radiation with matter within the atmosphere. • describe the potential effects of increased levels of carbon dioxide and methane on the Earth’s climate and how these effects may be mitigated 	<p>Production of Mind maps by students for revision purposes Covering Units C1-C6</p> <p>Review of required practicals see revision sheet.</p>
	<p>the correlation between change in atmospheric carbon dioxide . concentration and the consumption of fossil fuels.</p> <hr/> <p>consideration of scale, risk and environmental implications.</p>	<ul style="list-style-type: none"> • describe the major sources of carbon monoxide, sulphur dioxide, oxides of nitrogen and particulates in the atmosphere and explain the problems caused by increased amounts of these substances. 	
<p>Summer Term Y11 Term 2</p>	<p>Revision of topics C1-C3</p> <hr/> <p>Revision of topics C4-C6</p>	<p>Paper 3 topics</p> <hr/> <p>Paper 4 topics</p>	<p>Use of past papers available from OCR website and Physic and maths tutor website.</p>

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