


<div>جيمس فاندرز مدرسة</div> <div></div> <div>Year</div>				12	Chemistry	<div>High Performance Learning</div>
<div>Subject</div>						
Term	Week	Date	Focus	Summary	Learning Outcomes	
Term 2	15	02/01/23	Teacher 1: Group 2 Metals  Teacher 2: Periodicity	Teacher 1: Trends in Group 2 Uses of Group 2 Compounds  Teacher 2: Physical Properties of Period 3 Elements	Teacher 1: Explain the trends in atomic radius and first ionisation energy Explain the melting point of the elements in terms of their structure and bonding Understand the reactions of the elements Mg–Ba with water Recall the use of magnesium in the extraction of titanium from $TiCl_4$ Recall the relative solubilities of hydroxides and sulfates of the elements Mg–Ba in water Discuss the use of $Mg(OH)_2$ in medicine, $Ca(OH)_2$ in agriculture and $CaO/CaCO_3$ to remove $SO_2$ from flue gases Explain the use of acidified $BaCl_2$ solution to test for sulfate ions  Teacher 2: Explain the trends in atomic radius and first ionisation energy Explain the melting point of the elements in terms of their structure and bonding	
	16	09/01/23	Mock Exams	Mock Exams		
	17	16/01/23	Mock Exams	Mock Exams		
	18	23/01/23	Mock Exams	Mock Exams		
	19	30/01/23	Teacher 1: Introduction to Organic Chemistry  Teacher 2: Group 7 - The Halogens	Teacher 1: Representing Organic Compounds Homologous Series IUPAC Rules for Nomenclature  Teacher 2: Trends in Group 7 Properties Testing for Halide Ions	Teacher 1: Represent organic compounds as empirical, molecular, general, structural, displayed and skeletal formula Explain the characteristics of a homologous series Apply the IUPAC rules for nomenclature  Teacher 2: Explain the trend in electronegativity Explain the trend in boiling point of the elements in terms of their structure and bonding Explain the trend in oxidising ability of the halogens down the group, including displacement reactions of halide ions in aqueous solution Explain the trend in reducing ability of the halide ions, including the reactions of solid sodium halides with concentrated sulfuric acid Discuss the use of acidified silver nitrate solution to identify and distinguish between halide ions. Recall the trend in solubility of the silver halides in ammonia. Explain why silver nitrate solution is used to identify halide ions, the silver nitrate solution is acidified and ammonia solution is added	
	20	06/02/23	Teacher 1: Introduction to Organic Chemistry  Teacher 2: Group 7 - The Halogens	Teacher 1: Drawing Structures IUPAC Rules for Nomenclature  Teacher 2: Uses of Chlorine and Chlorate Required Practical	Teacher 1: Draw structural, displayed and skeletal formulas for given organic compounds Apply IUPAC rules for nomenclature to name organic compounds limited to chains and rings with up to six carbon atoms each Apply IUPAC rules for nomenclature to draw the structure of an organic compound from the IUPAC name limited to chains and rings with up to six carbon atoms each  Teacher 2: Recall the reaction of chlorine with water to form chloride ions and chlorate ions/ oxygen Appreciate that society assesses the advantages and disadvantages when deciding if chemicals should be added to water supplies Explain the reaction of chlorine with cold, dilute, aqueous NaOH and uses of the solution formed Carry out simple test-tube reactions to identify cations and anions	
		13/02/23			School Break Half Term February	
	21	20/02/23	Teacher 1: Introduction to Organic Chemistry  Teacher 2: Alkanes	Teacher 1: Structural Isomer Chain, Position and Functional Group Isomers Nomenclature of Isomers  Teacher 2: Fractional Distillation of Alkanes Thermal and Catalytic Cracking	Teacher 1: Define the term structural isomer Draw the structures of chain, position and functional group isomers Define the term stereoisomer Draw the structural formulas of E and Z isomers Apply the CIP priority rules to E and Z isomers  Teacher 2: Understand that alkanes are saturated hydrocarbons Explain that petroleum is a mixture consisting mainly of alkane hydrocarbons that can be separated by fractional distillation Recall the process of thermal and catalytic cracking and the different conditions Explain the economic reasons for cracking alkanes	
	22	27/02/23	Teacher 1: Alkenes  Teacher 2: Alkanes	Teacher 1: Structure, Bonding and Reactivity of Alkenes Addition Reactions of Alkenes  Teacher 2: Combustion of Alkanes Chlorination of Alkanes Free Radical Substitution Reactions	Teacher 1: Describe alkenes as unsaturated hydrocarbons Describe the bonding in alkenes Outline the mechanisms for the electrophilic addition reactions of alkenes with $HBr$ , $H_2SO_4$ and $Br_2$ Explain the formation of major and minor products by reference to the relative stabilities of primary, secondary and tertiary carbocation intermediates  Teacher 2: Write equations for complete or incomplete combustion Explain the production of pollutants from internal combustion engines and write appropriate equations Explain why sulfur dioxide can be removed from flue gases using calcium oxide or calcium carbonate Explain the reaction of methane with chlorine as a free-radical substitution mechanism involving initiation, propagation and termination steps	
	23	06/03/23	Teacher 1: Alkenes  Teacher 2: Halogenoalkanes	Teacher 1: Nomenclature for Polymers Properties of Polymers Epoxethane  Teacher 2: Nucleophilic Substitution Mechanisms Elimination Mechanisms	Teacher 1: Draw the repeating unit from a monomer structure Draw the repeating unit from a section of the polymer chain Draw the structure of the monomer from a section of the polymer Explain why addition polymers are unreactive Explain the nature of intermolecular forces between molecules of polyalkenes Explain the high reactivity of epoxethane Write equations for the reactions of epoxethane with water and with alcohols and outline the mechanism for these reactions Explain the economic and environmental importance of products including, surfactants and antifreeze, formed in these reactions.  Teacher 2: Outline the nucleophilic substitution mechanisms of halogenoalkanes reacting with nucleophiles $OH^-$ , $CN^-$ and $NH_3$ Explain why the carbon-halogen bond enthalpy influences the rate of reaction	
	24	13/03/23	Teacher 1: Organic Analysis  Teacher 2: Alcohols	Teacher 1: Identification of Functional Groups by Test Tube Reactions Required Practical  Teacher 2: Oxidation of Alcohols Elimination of Alcohols	Teacher 1: Identify the functional groups using reactions in the specification  Teacher 2: Write equations for these oxidation reactions (equations showing $[O]$ as oxidant are acceptable) Explain how the method used to oxidise a primary alcohol determines whether an aldehyde or carboxylic acid is obtained Use chemical tests to distinguish between aldehydes and ketones including Fehling's solution and Tollens' reagent Outline the mechanism for the elimination of water from alcohols	
	25	20/03/23	Teacher 1: Organic Analysis  Teacher 2: Retrieval Practice	Teacher 1: Mass Spectrometry Infrared Spectroscopy  Teacher 2: Unit 2 Retrieval Practice Unit 2 Assessment Unit 2 Feedback	Teacher 1: Use precise atomic masses and the precise molecular mass to determine the molecular formula of a compound Use infrared spectra and the Chemistry data booklet to identify particular bonds, and therefore functional groups, and also to identify impurities  Teacher 2: Evaluate knowledge of all content from physical and organic chemistry and apply it to different retrieval tasks.	