



YEAR 12 - Teacher 1

'An ambitious curriculum that meets the needs of all'

Medium Term Planning - Topic: Organic and Physical Chemistry

Curriculum Intent	In addition to working further on objectives from KS4, pupils will be taught, following National Curriculum guidelines, the following this term:			
Skills/Assessment Objective Links	Unit Title	Spec	Knowledge	Skills developed from learning knowledge
	Intro to organic	3.3.1	IUPAC naming rules. Different ways of showing structures. Different forms of isomerism	Naming organic structures and drawing them from names. Identifying isomers
	Alkanes	3.3.2	Forms of combustion. How crude oil is separated. Forms of cracking	Writing balanced equations for combustion reactions. Describing fractional distillation. Explaining the difference between different types of cracking
	Bonding	3.1.3	Different types of bonding. Crystal structures. Electronegativity. Intermolecular forces	Identifying bonding types from properties given. Explain why polarity arises in covalent molecules. Describe MP/BP in terms of different intermolecular forces
	Haloalkanes	3.3.3	Rules of reaction mechanisms. Free radical substitution, nucleophilic substitution, elimination, ozone depletion.	Describing a free radical substitutions and the steps involved. Drawing reaction mechanisms for nucleophilic substitution and elimination reactions. Explaining how ozone depletion is catalysed by free radicals from CFCs
	Alkenes	3.3.4	Structure of alkenes (sigma and pi bonds) stereoisomerism, electrophilic addition reactions, addition polymers	Drawing the overlapping pi bonds in an alkene. Naming E-Z isomers using the CIP rules. Drawing the mechanism of an electrophilic addition reaction. Naming and drawing addition polymers
	Alcohols	3.3.5	Production of alcohols, oxidation of alcohols, dehydration of alcohols	Describing the differences between fermentation and hydration of ethene. Explaining what happens when primary, secondary and tertiary alcohols are oxidised. Draw a mechanism for the elimination reaction of ethanol to form ethene using sulfuric acid.
	Molecular shapes	3.1.3	Names of different molecular shapes and what happens to internal bond angles when bonding pairs are replaced with lone pairs	Identify and draw different molecules using VSEPR. Work out bond angles. Suggest why bond angles are changed due to different interactions between bonding and lone pairs.
Spiritual, moral, social, and cultural development	SMSC: Combustion of fuels – linked to global warming. Why CFCs are banned (destruction of ozone layer) PSHE/British Values: Links to research in UK Skills Builder: Links to practical applications at University and research			
Numeracy	Balancing equations			
Literacy	Vocabulary Tier 2: Highlighted above Vocabulary Tier 3: Highlighted above			

	Reading: Exam questions, Textbooks Writing: Correct usage of key terms in exam responses Oracy: Use of subject specific language			
Becoming future ready	Careers/Employability: Foundation knowledge for application of Organic Chemistry in Organic Synthesis			
Adaptation	Throughout this topic, quality first teaching will provide differentiation:			
QFT/SEND Provision	By resource: Doodle powerpoints, homework books, exam papers, textbooks By Intervention: by providing different levels of supervision and support By Progressive Questioning: exploring pupils' understanding through interactive dialogue. By Grouping: according to prior attainment, gender, social preference, preferred learning style. By Task: Pupils should be involved in the identification of targets which are meaningful to them and in the selection of an appropriate task from the given range. By Offering Optional Activities: In class or as homework, to extend learning. This QFT/SEND provision will be explicit within the lesson-by-lesson schemes of work.			
Implementation Curriculum Delivery	Unit Title	Spec	Knowledge	Skills developed from learning knowledge
Learning Outcomes (Knowledge) <u>Core Knowledge</u>	Intro to organic	3.3.1	<u>IUPAC naming rules.</u> Different ways of showing structures. <u>Different forms of isomerism</u>	Naming organic structures and drawing them from names. Identifying isomers
	Alkanes	3.3.2	Forms of combustion. How crude oil is separated. Forms of cracking	Writing balanced equations for combustion reactions. Describing fractional distillation. Explaining the difference between different types of cracking
	Bonding	3.1.3	Different types of bonding. Crystal structures. Electronegativity. <u>Intermolecular forces</u>	Identifying bonding types from properties given. Explain why polarity arises in covalent molecules. Describe MP/BP in terms of different intermolecular forces
	Haloalkanes	3.3.3	<u>Rules of reaction mechanisms.</u> Free radical substitution, nucleophilic substitution, elimination, ozone depletion.	Describing a free radical substitutions and the steps involved. Drawing reaction mechanisms for nucleophilic substitution and elimination reactions. Explaining how ozone depletion is catalysed by free radicals from CFCs
	Alkenes	3.3.4	Structure of alkenes (sigma and pi bonds) <u>stereoisomerism</u> , electrophilic addition reactions, addition polymers	Drawing the overlapping pi bonds in an alkene. Naming E-Z isomers using the CIP rules. Drawing the mechanism of an electrophilic addition reaction. Naming and drawing addition polymers
	Alcohols	3.3.5	Production of alcohols, <u>oxidation of alcohols</u> , dehydration of alcohols	Describing the differences between fermentation and hydration of ethene. Explaining what happens when primary, secondary and tertiary alcohols are oxidised. Draw a mechanism for the elimination reaction of ethanol to form ethene using sulfuric acid.
	Molecular shapes	3.1.3	<u>Names of different molecular shapes</u> and what happens to internal bond angles when bonding pairs are replaced with lone pairs	Identify and draw different molecules using VSEPR. Work out bond angles. Suggest why bond angles are changed due to different interactions between bonding and lone pairs.

Current learning to be developed in the future within:	Y13 topics
Assessment	Regular assessment using past exam questions. Classwork and homework based on exam papers and self marking so pupils become familiar with how work is assessed.
Impact	Pupils will be ready to study the more advanced topics in Y13 that build upon the foundation knowledge gained here. They will be able to readily apply reaction mechanisms to unfamiliar chemicals and their practical skills will develop so that they become less reliant on teacher instruction throughout the year.