



Topic Name	Term	Skills Developed	Link to NC Subject Content	Next link in curriculum	Prior Knowledge
Amount of substance	Autumn	<ul style="list-style-type: none">MS 0.1 Students carry out calculations using numbers in standard and ordinary form eg using the Avogadro constant.MS 0.4 Students carry out calculations using the Avogadro constant.MS 1.1 Students report calculations to an appropriate number of significant figures, given raw data quoted to varying numbers of significant figures. Students understand that calculated results can only be reported to the limits of the least accurate measurement.MS 2.2, 2.3 and 2.4 Students carry out calculations with the ideal gas equation, including rearranging the ideal gas equation to find unknown quantities. <p>Required Practicals:</p> <p>1A Making a Volumetric Solution</p> <p>1B A Simple Acid Base Titration</p>	<ul style="list-style-type: none">Relative atomic mass and relative molecular massThe mole and the Avogadro constantThe ideal gas equationEmpirical and molecular formulaBalanced equations and associated calculations	<ul style="list-style-type: none">These skills are needed throughout the course	GCSE 4.3 Quantitative Chemistry



Introduction to Organic Chemistry	Autumn	<ul style="list-style-type: none">MS 4.2 Students given the structure of one isomer can draw further isomers. Various representations can be used to give the opportunity to identify those that are isomeric.MS 4.1, 4.2 and 4.3 Students understand the origin of E–Z isomerism. Students can draw different forms of isomers.	<ul style="list-style-type: none">NomenclatureReaction mechanismsIsomerism	This content is needed before all other Organic Chemistry can be successfully understood	GCSE 4.7 Organic Chemistry
Alkanes	Autumn		<ul style="list-style-type: none">Fractional distillation of crude oilModification of alkanes by crackingCombustion of alkanesChlorination of alkanes	<ul style="list-style-type: none">Year 12 Halogenoalkanes	GCSE 4.7 Organic Chemistry A Level 3.3.1 Introduction to Organic Chemistry
Halogenoalkanes	Spring	Research opportunity Students could investigate the role of chemists in the introduction of legislation to ban the use of CFCs and in finding replacements.	<ul style="list-style-type: none">Nucleophilic substitutionEliminationOzone depletion	<ul style="list-style-type: none">Y13 AminesY12 Alcohols	GCSE 4.7 Organic Chemistry A Level 3.3.1 Introduction to Organic Chemistry



Alkenes	Spring		<ul style="list-style-type: none">• Structure, bonding and reactivity• Addition reactions of alkenes• Addition polymers	<ul style="list-style-type: none">• Y12 Alcohols• Y13 Carboxylic Acids	GCSE 4.7 Organic Chemistry A Level 3.3.1 Introduction to Organic Chemistry
Alcohols	Spring	Required practicals: 5A Distillation of a product from a reaction – production of Cyclohexene from Cyclohexanol AND/OR 5B Preparation of Ethanal from Ethanol	<ul style="list-style-type: none">• Alcohol production• Oxidation of alcohols• Elimination	<ul style="list-style-type: none">• Y 12 Polymerisation• Y13 Carboxylic acids	GCSE 4.7 Organic Chemistry A Level 3.3.1 Introduction to Organic Chemistry 3.3.4 Alkenes
Organic Analysis	Summer	<ul style="list-style-type: none">• Students should be able to use data in the Chemistry Data Sheet or Booklet to suggest possible structures for molecules. Required practical: <ul style="list-style-type: none">• 6. Tests for alcohol, aldehyde, alkene, halogenoalkane and carboxylic acid	<ul style="list-style-type: none">• Identification of functional groups by test-tube reactions• Mass spectrometry• Infrared spectroscopy	<ul style="list-style-type: none">• Y 13 NMR Spectroscopy	GCSE 4.7 Organic Chemistry 4.8 Chemical Analysis A Level 3.3.1 Introduction



					to Organic Chemistry
Amino Acids, Proteins and DNA (A-level only)	Summer	<ul style="list-style-type: none">Research opportunity Students could research problems associated with the disposal of different polymers.	<ul style="list-style-type: none">Amino acids (A-level only)Proteins (A-level only)Enzymes (A-level only)DNA (A-level only)Action of anticancer drugs (A-level only)	<ul style="list-style-type: none">Y13 Condensation Polymerisation	GCSE 4.7 Organic Chemistry A Level 3.3.1 Introduction to Organic Chemistry 3.3.5 Alcohols