



Years 12 & 13 Curriculum

A Level: Chemistry



Year 12			
Autumn 1 & 2		Between Spring 1 & Summer 2	
Topic	Foundations in Chemistry	Periodic Table & Energy	Core Organic Chemistry
Key Concepts	Module 2 Chapters 2-6: <ul style="list-style-type: none"> Atomic structure and isotopes Relative mass Formulae and equations Amount of substance and the mole Determination of formulae Moles and volumes Reacting quantities Acids, bases and neutralisation Acid-base titrations Redox Electron structure Ionic bonding and structure Covalent bonding Shapes of molecules and ions Electronegativity and polarity Intermolecular forces Hydrogen Bonding 	Module 3 Chapters 7-10: <ul style="list-style-type: none"> The Periodic Table Ionisation energies Periodic trends in bonding and structure Group 2 The halogens Qualitative analysis Enthalpy changes Measuring enthalpy changes Bond enthalpies Hess' law and enthalpy cycles Reaction rates Catalysts The Boltzmann distribution Dynamic equilibrium and le Chatelier's principle The equilibrium constant K_c 	Module 4 Chapters 14-17: <ul style="list-style-type: none"> Properties of alcohols Reactions of alcohols The chemistry of the haloalkanes Organohalogen compounds in the environment Practical techniques in organic chemistry Synthetic routes Mass spectrometry Infrared spectroscopy
	Core Organic Chemistry	Physical Chemistry & Transition Elements	
	Module 4 Chapters 11-13: <ul style="list-style-type: none"> Organic chemistry Nomenclature of organic compounds Representing the formulae of organic compounds Isomerism Introduction to reaction mechanisms Properties of alkanes Chemical reactions of alkanes Properties of alkenes Stereoisomerism Reactions of alkenes Electrophilic addition of alkenes 	Module 5 Chapters 18-19: <ul style="list-style-type: none"> Orders, rate equations & rate constants Concentration-time graphs Rate-concentration graphs Rate-determining step Rate constants and temperature The equilibrium constant K_c The equilibrium constant K_p Controlling the position of equilibrium 	Module 5 Chapters 20-21: <ul style="list-style-type: none"> Bronsted-Lowry acids and bases The pH scale and strong acids The acid dissociation constant K_a The pH of weak acids pH and strong bases Buffer solutions Buffer solutions in the body Neutralisation



Years 12 & 13 Curriculum *(continued)*

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Year 13	Autumn & Spring Terms		Summer Term
	Physical Chemistry & Transition Elements	Organic Chemistry & Analysis	Revision & Exams
Key Concepts	Module 5 Chapters 22-24: <ul style="list-style-type: none">Lattice enthalpyEnthalpy changes in solutionFactors affecting lattice enthalpy and hydrationEntropyFree EnergyRedox reactionsManganate (VII) redox titrationsIodine/ thiosulphate redox titrationsD-block elementsFormation & shapes of complex ionsStereoisomerism in complex ionsLigand substitution & precipitationRedox & qualitative analysis	Module 6 Chapters 25-29 <ul style="list-style-type: none">Introducing benzeneElectrophilic substitution reactions of benzeneThe chemistry of phenolDistribution and directing groupsCarbonyl compoundsIdentifying aldehydes and ketonesCarboxylic acidsCarboxylic derivativesAminesAmino acids, amides and chiralityCondensation polymersCarbon-carbon bond formationFurther practical techniquesFurther synthetic routesChromatography and functional group analysisNuclear magnetic resonance (NMR) spectroscopyCarbon-13 NMR spectroscopyProton NMR spectraInterpreting NMR spectraCombined Techniques	Revise for (and take) the A Level Chemistry exams




Years 12 & 13 Assessment

A Level: Chemistry



All students will sit an assessment and a mock examination in Year 12 and two mock examinations in Year 13.

	Year 12		Year 13		Revision Resources
	Assessment	Mock Exam	Mock Exam	Mock Exam	
	Autumn Term	Summer Term	Autumn Term	Spring Term	
Style of Assessment	Multiple-choice and longer answer questions	Multiple-choice and longer answer questions	Multiple-choice and longer answer questions	Multiple-choice and longer answer questions	Kennet Resources <ul style="list-style-type: none"> • Core Questions • Knowledge Organisers • Learning Habits External Resources <ul style="list-style-type: none"> • www.physicsandmathstutor.com • www.kerboodle.com You can also find additional revision material on Frog 
Topics Assessed	All topics covered: <ul style="list-style-type: none"> • Electrons & bonding • Shapes of molecules & intermolecular forces • Atoms, ions & compounds • Amount of substance • Acids and redox • Basic concepts of organic chemistry • Alkanes • Alkenes 	<ul style="list-style-type: none"> • Electrons & bonding • Shapes of molecules & intermolecular forces • Atoms, ions & compounds • Amount of substance • Acids and redox • Basic concepts of organic chemistry • Periodicity • Enthalpy • Rates • Alkanes • Alkenes • Alcohols • Haloalkanes • Spectroscopy (1) 	Part 1: Summative of Year 12 topics Part 2: <ul style="list-style-type: none"> • Rates of reaction • Equilibria • Acids, bases & pH • Aromatic chemistry • Carbonyl chemistry 	All topics covered over the course.	