



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: - 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: - 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: - 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: - 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: - 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: - 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		
Topic		
Key Concepts		
Physical Chemistry & Transition Elements		
Organic Chemistry & Analysis		
Revision & Exams		
Module 5 Chapters 22-24: - Lattice enthalpy - Enthalpy changes in solution - Factors affecting lattice enthalpy and hydration - Entropy - Free Energy - Redox reactions - Manganate (VII) redox titrations - Iodine/ thiosulphate redox titrations - D-block elements - Formation & shapes of complex ions - Stereoisomerism in complex ions - Ligand substitution & precipitation - Redox & qualitative analysis		Module 6 Chapters 25-29 - Introducing benzene - Electrophilic substitution reactions of benzene - The chemistry of phenol - Distribution and directing groups - Carbonyl compounds - Identifying aldehydes and ketones - Carboxylic acids - Carboxylic derivatives - Amines - Amino acids, amides and chirality - Condensation polymers - Carbon-carbon bond formation - Further practical techniques - Further synthetic routes - Chromatography and functional group analysis - Nuclear magnetic resonance (NMR) spectroscopy - Carbon-13 NMR spectroscopy - Proton NMR spectroscopy - Interpreting NMR spectra - Combined 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 • Core Questions • Knowledge Organisers • Learning Habits External Resources • www.physicsandmathstutor.com • www.kerboodle.com You can also find additional revision material on Frog 
Topics Assessed	All topics covered: • Electrons & bonding • Shapes of molecules & intermolecular forces • Atoms, ions & compounds • Amount of substance • Acids and redox • Basic concepts of organic chemistry • Alkanes • Alkenes	• 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: • Rates of reaction • Equilibria • Acids, bases & pH • Aromatic chemistry • Carbonyl chemistry	All topics covered over the course.	