

Chemistry

'Chemistry begins in the stars. The stars are the source of the chemical elements, which are the building blocks of matter and the core of our subject' – Peter Atkins

Year 12			
	Autumn	Spring	Summer
Curriculum Knowledge	<ul style="list-style-type: none"> • Amount of Substance • Intro to organic chemistry • Alkanes • Atomic Structure • Bonding • Periodicity • Kinetics 	<ul style="list-style-type: none"> • Energetics • Halogenoalkanes • Alkenes • Alcohols • Chemical Equilibria and Le Chatelier's principle • Oxidation, reduction and redox Equations 	<ul style="list-style-type: none"> • Organic Analysis • Group 2, the alkaline earth metals • Group 7(17), the halogens • Optical isomers • Aldehydes and ketones • Rate Equations
Tier 3 Vocabulary	Atomic number, mass number, isotopes, ionisation, orbitals, Avogadro's, mole, empirical formula, titration, concentration, atom economy, ions, lattice, covalent bonding, giant covalent, delocalised, valence shell, electron density, electronegativity, dipole, polar bonds, hydrogen bonding, permanent dipole, Van de Waals, enthalpy, endothermic, exothermic, Hess's law, bond enthalpies, activation energy, Maxwell-Boltzmann distribution, catalysts, surface area, radius, atomic number, Periodic Table, oxidation, melting, electronegativity, organic, skeletal, functional group, mechanism, reaction, isomer, curly arrow, stereoisomerism, hydrocarbon, alkane, alkene,	Reversible, closed system, pressure, equilibrium, Redox, oxidation, reduction, half-equation, spectator ion, halogenoalkane, electronegativity, oxidation, reduction, redox, enthalpy, substitution, elimination, chlorofluorocarbons, ozone, alkenes, electrophile, nucleophile, carbocation, fission, polymer, alcohol, diol, triol, fermentation, anaerobic, carbon neutral, aldehydes, ketones, dehydration, carboxylic acids,	Rate constant, order, Arrhenius equation, rate-determining step, electronegativity, reduction, oxidation, disproportionation, functional group, mass spectrometry, molecular ion, infrared spectroscopy, fingerprint, wavenumber, stereoisomerism, chiral, optical, enantiomers, racemic, mixture, plane-polarised light, aldehydes, ketones, Fehling's, Tollens, carbonyl, hydroxynitrile, nucleophilic addition,

	fractional distillation, saturated, fractions, cracking, polymer, thermal, aromatic, zeolite, combustion, greenhouse gas, initiation, propagation, termination		
Curriculum Opportunities	Reading and research via independent study Supporting KS3 lessons Supporting Science Club Online lectures and events	Reading and research via independent study Supporting KS3 lessons Supporting Science Club Online lectures and events	Reading and research via independent study Supporting KS3 lessons Supporting Science Club Online lectures and events Outreach activity with primary school children
Year 13			
	Autumn	Spring	Summer
Curriculum Knowledge	<ul style="list-style-type: none"> ● Aldehydes and ketones ● Carboxylic acids and derivatives ● Aromatic Chemistry ● Amines ● Polymers ● Equilibrium constant ● Acids and bases ● NMR 	<ul style="list-style-type: none"> ● Amino acids, proteins and DNA ● Organic Synthesis ● Thermodynamics ● Chromatography ● Properties of Period 3 elements and their oxides ● Transition Metals 	<ul style="list-style-type: none"> ● Electrode potential & electrochemical cells ● Reactions of ions in aqueous solution
Tier 3 Vocabulary	Equilibrium constant, partial pressure, dissociate, acid, alkali, neutralisation, equilibrium, pH probe, buffer, weak acids, dissociation, esters weak acids, dissociation,	Bond, enthalpy, affinity, lattice, hydration, solution, entropy, Gibbs free energy, dissociation, period 3, oxides, amphoteric, transition metals, d-block, ligand, complex ion,	Electrodes, half-cell, electrochemical cell, salt bridge, oxidised, reduced, electromotive force, rechargeable, batteries, complex, amphoteric, ions, precipitate

	esters, acyl, addition-elimination, triglycerides, benzene, delocalised, nitration, electrophilic substitution, aromatic, amines, nitronium, primary, secondary, tertiary, aliphatic amines, nucleophilic substitution, cationic surfactants, quaternary ammonium, nuclear magnetic resonance, chemical shift, integration,	co-ordinate bond, exchange, substitution, bidentate, monodentate, didentate, chelating, haemoglobin, transition, tetrahedral, square planar, octahedral, isomerism, cis-trans, Tollens, colorimetry, redox, titration, contact process, condensation, polymers, polyesters, amino acids, protein, monomers, permanent dipoles, biodegradable, hydrolysis, recycling, polymerisation helix, zwitterion, chiral, peptide, enzyme, active sites, catalyse, nucleotides, DNA, base, synthetic route, chromatography	
Curriculum Opportunities	Reading and research via independent study Supporting KS3 lessons Supporting Science Club Online lectures and events	Reading and research via independent study Supporting KS3 lessons Supporting Science Club Online lectures and events Spectroscopy in a suit case	