

	Autumn 1	Autumn 2	Chemistry (Summer 1	Summer 2
	Atomic Structure and Moles	Acids and REDOX	Spring 1 Periodicity	Spring 2 Enthalpy Changes	Rates of Reaction	Revision and Year 13 work.
Content: What will students know	This section builds directly from GCSE Science, starting with basic atomic structure and isotopes. Important basic chemical skills are developed: writing chemical formulae, constructing equations and calculating chemical quantities using the concept of amount of substance. The role of acids, bases and salts in chemistry is developed in the context of neutralisation reactions. Finally, redox reactions are studied within the context of oxidation number and electron transfer.	The role of acids, bases and salts in chemistry is developed in the context of neutralisation reactions. Finally, redox reactions are studied within the context of oxidation number and electron transfer.	Periodic trends are first studied to extend the understanding of structure and bonding. Group properties are then studied using Group 2 and the halogens as typical metal and non-metal groups respectively, allowing an understanding of redox reactions to be developed further. Finally, this section looks at how unknown ionic compounds can be analysed and identified using simple test-tube tests.	This section introduces physical chemistry within the general theme of energy. Learners first learn about the importance of enthalpy changes, their uses and determination from experimental results including enthalpy cycles. This section then investigates the ways in which a change in conditions can affect the rate of a chemical reaction, in terms of activation energy, the Boltzmann	The integrated roles of enthalpy changes, rates, catalysts and equilibria are considered as a way of increasing yield and reducing energy demand, improving the sustainability of industrial processes.	Students will spend some of this half term revising for mock examinations and preparing for Year 13 by further study of rates of reactions, orders, the rate equation and initial/graphical methods of studying reaction rates.



				distribution and catalysis. Reversible reactions are then studied, including the dynamic nature of chemical equilibrium and the influence of conditions upon the position of equilibrium.		
Assessment	End of topic assessment.	End of topic assessment.	End of year assessment.			

Year 12: Chemistry (Strand 2)								
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2			



	Electron structure Bonding	Organic Chemistry introduction	Structure and reactions of alkanes and alkenes	Structure and reactions of alcohols and haloalkanes.	Instrumental Analysis	Revision and Year 13 Work
Content: What will students know	This section introduces the concept of atomic orbitals and develops a deeper understanding of electron configurations linked to the periodic table. The central role of electrons in ionic and covalent bonding is then studied. The important role of molecules is studied, including an explanation of polarity and intermolecular forces. Finally, this section looks at how bonding and structure contribute to properties of substances.	This section is fundamental to the study of organic chemistry. This section introduces the various types of structures used routinely in organic chemistry, nomenclature, and the important concepts of homologous series, functional groups, isomerism and reaction mechanisms using curly arrows.	The initial ideas are then developed within the context of the hydrocarbons: alkanes and alkenes including free radical substitution and electrophilic addition reactions.	This section introduces two further functional groups: alcohols and haloalkanes, and considers the importance of polarity and bond enthalpy to organic reactions. Throughout this section, there are many opportunities for developing organic practical skills, including preparation and purification of organic liquids.	Finally, the important techniques of infrared spectroscopy and mass spectrometry are used to illustrate instrumental analysis as a valuable tool for identifying organic compounds.	Students will be preparing for examinations and then proceed to study Year 13 material on Benzene and its derivatives.
Assessment	End of topic assessment.	End of topic assessment.	End of topic assessment and mocks.	End of topic assessment.	End of topic assessment.	End of year assessment.



Year 13: Chemistry (Strand 1)									
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2			
	Rates of reactions and equilibria.	Acid dissociation	Energy and Entropy	Transition Metals	Revision	Students on Study Leave			



		constants and Buffers				
Content: What will students know	The largely qualitative treatment of reaction rates and equilibria encountered in Module 3 is developed within a quantitative and graphical context.	This section also allows learners to develop practical quantitative techniques involved in the determination of reaction rates and pH. There are many opportunities for developing mathematical skills, including use of logarithms and exponents, when studying the content of this section and when carrying out quantitative practical work.	Born–Haber cycles are used as a theoretical model to illustrate the energy changes associated with ionic bonding. Entropy and free energy are then introduced as concepts used to predict quantitatively the feasibility of chemical change. Redox chemistry permeates chemistry and the introductory work in Module 2 is developed further within this section, including use of volumetric analysis for redox titrations and an introduction of electrochemistry in the context of electrode potentials.	This section provides learners with a deeper knowledge and understanding of the periodic table within the context of the transition elements. This section includes the role of ligands in complex ions, stereochemistry, precipitation, ligand substitution and redox reactions. The colour changes and observations in these reactions increase the toolkit of qualitative inorganic tests for identifying unknown ionic compounds.	Students will spend most of this time revising for their external examinations.	



Assessment	End of topic assessment.	End of topic assessment.	End of topic assessment and mocks	End of topic assessment.	End of topic assessment	A level Exams

Year 13: Chemistry (Strand 2)								
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2		
	Benzene and its derivatives	Carbonyl Compounds	Nitrogen compounds	Analysis and Combined Techniques	Revision	Students on Study Leave		
Content : What will students know	This section extends the range of functional groups	The important carbonyl compounds, aldehydes and	This section focuses on organic nitrogen compounds,	This section develops and complements the	Students will spend most of this time revising			



encountered in Module 4, Aromaticketones are then studied.including amines, areas of organic chiralityareas of organic chemistrates chemistratesfor their external examinations.Aromatic compounds are first including the central role of delocalisationFinally, unctional groups, acyl thereisteaand their related isomerism is also tothordozed, chorides and polymerisation is studied. The atso introduced, organic synthesis.for their external examinations.of arenes and phenols. Directing groups are also organic synthesis.studied. The and their emphasised.for their external examination and optical isomerism is also polymerisation is tothordoced, and compared and comparedfor their external examination monstratesIncluding their importance to organic synthesis.organic emphasised.for their external examinational polymerisation is organic synthesis is is tressed.for their external examinational tothordoced, most actornorganic synthesis.entry of arenes and organic synthesis is is tressed.spectroscopy, mass spectroscopy to product.norganic product. This module allow learners in angle specially their organic poptrunities to their organic poptrunities of their organic product.spectroscopi to analysis may be used in to consider multi- spectroscopy to proportunities to analysis studied their organic product.for the external their organic product.miceusian and their organic and comparedfor their external demension in organic synthesisfor their exte		listen en ene d	the structure is seen to		for the size of size 1	
Aromatic compounds are first introduced, including the central role of delocalisation within the chemistry of arenes and phenols. Directing groups are also introduced, including their importance to organic synthesis.Finally, carboxylic acids and their related introduced, studied. The importance of emphasised.amino acids. Chirality and optical isomersm is also introduced, and compared with additional organic synthesis.chemistry chorides and esters, are studied. The importance of carbox, carbox, carbox, carbox, carbox, carbox organic synthesis.chemistry carbox, carbox, carbox, carbox, many organic synthesis is emphasised.chemistry chorides in organic synthesis is stressed.chemistry encountered thow analytical the chiques motuced in mass spectrometry and elemental analysis) may be used in combination with NMRNodel ableAmino acids.chemistry encountered thow analytical the importance of carbox, carbox, carbox, carbox ablechemistry encountered their organic synthesis ablechemistry encountered their organic provide evidence or ordite vidence or ordite vidence or ordite vidence or ordite vidence or ordite vidence ordition with spectroscopy to provide evidence ordited analysis studied during the A level course provide learners with an in preparing and putfying organic heir organic provide vidence provide learners with an in preparing and putfying organic heir organic provide in preparing and putfying regaric provide learners with an in preparing and putfying regaric heir organic provide learners with an in preparing and putfying			0			
compounds are first introduced, including the central role of delocalisation within the chemistry of arenes and phenols. Directing groups are also organic synthesis.carboxylic acids and their related functional groups, acyl studied. The studied. The acyl chlorides in organic synthesis.Chirality and optical isomerism is also of arenes and phenols. Directing groups are also organic synthesis.Carboxylic acids functuolad groups, acyl atuided. The studied. The acyl chlorides in organic synthesis isChirality functuolad esters, are acyl chlorides in organic synthesis is is stressed.previously entoward the importance of carbon-carbon bond formation in organic synthesis is stressed.previously entoward the importance of carbon-carbon bond formation in organic product. The importance routes towards an organic product. This module allows learners many opportunities to further develop their organic potive failed in to consider multi- stage synthetic allows learners many in preparing and protide exidence organic synthesis to is trutural features in motion with an instrumentation instrumentation protide learners with an instrumentation protide learners with an inportance and provide learners with an inportance provide learners with an 				Ĵ,	examinations.	
introduced, including the central role of delocalisation within the chemistry of arenes and phenols. Directing groups are also includuced, includuced, includuced, includuced, includuced, includuced, includus their related adso introduced, includus their organic synthesis.and their related isomerism is also introduced, also introduced, and compared and compared module 4 (infrared spectroscopy, mass spectroscopy, mass spectroscopy to spectroscopy to spect				3		
including the central role of delocalisation within the chemistry of arenes and phenols. Directing groups are also introduced, including their importance to organic synthesis.	•	-	2			
central role of delocalisation within the chemistry of arenes and phenols. Directing groups are also including their importance to organic synthesis.groups, acyl chlorides and studied. The importance of angine synthesis is emphasised.introduced, introduced, organic synthesis is emphasised.introduced, infract carbon-carbon bond formation in organic synthesisintroduced, infract carbon-carbon bond formation in organic synthesisintroduced, infract carbon-carbon bond formation in organic synthesisintroduced, infract 						
delocalisation within the chemistry of arenes and phenols. Directing groups are also introduced, including their importance to organic synthesis.						
within the chemistry of arenes and phenols. Directing groups are also introduced, including their importance to organic synthesis.esters, are studied. The importance of acyl chlorides in organic is synthesis.polymerisation is also introduced importance to organic synthesis.techniqués and compared with additional polymerisation. The importance of carbon-carbon bond formation in organic synthesistechniqués and compared (infrared 						
of arenes and phenols. Directing groups are also introduced, including their importance to organic synthesis.				2		
phenols. Directing groups are also introduced, including their importance to organic synthesis.importance of acyl chlorides in organic synthesis is emphasised.and compared with additional polymerisation. The importance of carbon-carbon bond formation in organic synthesisModule 4 (infrared mass spectroscopy, 		5				
groups are also introduced, including their importance to organic synthesis.	of arenes and	studied. The				
introduced, including their importance to organic synthesis.	phenols. Directing	g importance of	and compared	Module 4		
including their importance to organic synthesis.	ê î	2		(infrared		
importance to organic synthesis.emphasised.carbon-carbon bond formation in organic synthesisspectrometry and elemental analysis) may be used in Combination with NMRLearners are also ablecombination with NMRto consider multi- stage synthetic routes towards an organic product. This module allows learners manyspectroscopy to provide evidence routes towards an organic product. The molecules.The manyinstrumentation methods of analysis studied their organic practical skills, especially in preparing and 	introduced,	organic	polymerisation.	spectroscopy,		
organic synthesis.bond formation in organic synthesis is stressed. Learners are also ableelemental analysis) may be used in combination with NMR spectroscopy to provide evidence of structural features in molecules.Markoworganic synthesis is stressed. to consider multi- stage synthetic routes towards an organic product. This module allows learners many opportunities to further develop their organic practical skills, especially in preparing and purifying organicelemental analysis) may be used in combination with NMR spectroscopy to provide evidence of structural features in molecules. The analysis studied during the A level course provide learners with an im preparing and purifying organic		-	-	mass		
organic synthesis is stressed. Learners are also able NMR to consider multi- stage synthetic routes towards an organic product. This module allows learners many opportunities to further develop their organic further develop further develop	importance to	emphasised.		spectrometry and		
is stressed. Learners are also able to consider multi- stage synthetic routes towards an organic product. This module allows learners many opportunities to further develop their organic practical skills, especially in preparing and purifying organic	organic synthesis		bond formation in	elemental		
Learners are also able NMR to consider multi- stage synthetic provide evidence routes towards an organic product. features in This module molecules. allows learners The many instrumentation opportunities to methods of further develop analysis studied their organic during the A level practical skills, course provide especially learners with an in preparing and purifying organic knowledge,			organic synthesis	analysis) may be		
ableNMRto consider multi- stage syntheticspectroscopy to provide evidenceroutes towards an organic product.of structural features inThis modulemolecules.allows learnersThemanyinstrumentationopportunities to further developmethods of analysis studiedtheir organicduring the A levelpractical skills, especiallycourse providein preparing and purifying organicimportant base of knowledge,			is stressed.			
to consider multi- stage synthetic routes towards an organic product. This module allows learners many opportunities to further develop their organic practical skills, especially in preparing and purifying organic knowledge,			Learners are also	combination with		
stage synthetic routes towards an organic product. This moduleprovide evidence of structural features in molecules.allows learners manyThe instrumentation opportunities to further develop their organic during the A level practical skills, especiallymethods of learners with an important base of knowledge,			able	NMR		
routes towards an organic product. This module allows learners many opportunities to further develop their organic practical skills, especially in preparing and purifying organic knowledge,			to consider multi-	spectroscopy to		
organic product. This module allows learnersfeatures in molecules.The many opportunities to further develop their organicThe methods of analysis studied during the A level practical skills, especiallyLearners with an in preparing and purifying organicimportant base of knowledge,			stage synthetic	provide evidence		
This module allows learnersmolecules.allows learnersThemanyinstrumentationopportunities to further developmethods oftheir organicduring the A levelpractical skills, especiallycourse providelearners with an in preparing and purifying organicimportant base of			routes towards an	of structural		
allows learners manyThe instrumentation opportunities to further develop their organicThe instrumentation during the A level practical skills, especiallypractical skills, in preparing and purifying organiccourse provide important base of knowledge,			organic product.	features in		
manyinstrumentationopportunities tomethods offurther developanalysis studiedtheir organicduring the A levelpractical skills,course provideespeciallylearners with anin preparing andimportant base ofpurifying organicknowledge,			This module	molecules.		
opportunities to methods of further develop analysis studied their organic during the A level practical skills, course provide especially learners with an in preparing and important base of purifying organic knowledge,			allows learners	The		
further develop their organic practical skills, in preparing and purifying organicanalysis studied during the A level course provide learners with an important base of knowledge,			many	instrumentation		
their organic during the A level practical skills, course provide especially learners with an in preparing and important base of purifying organic knowledge,			opportunities to	methods of		
practical skills, course provide especially learners with an in preparing and important base of purifying organic knowledge,			further develop	analysis studied		
especially learners with an in preparing and important base of purifying organic knowledge,			their organic	during the A level		
especially learners with an in preparing and important base of purifying organic knowledge,			practical skills,	course provide		
in preparing and important base of purifying organic knowledge,				learners with an		
purifying organic knowledge,				important base of		
			solids, including			



			recrystallisation and determination of melting points.	understanding and awareness for further study in Higher Education and in many areas of employment in the broad scientific field. This section also looks at how unknown organic functional groups can be analysed and identified using simple test- tube tests.		
Assessment	End of topic assessment.	End of topic assessment.	End of topic assessment.	End of topic assessment.	End of topic assessment.	A level exams