Year 12: Chemistry (Strand 1)						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Atomic Structure and Moles	**Acids and REDOX**	**Periodicity**	**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 topic 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

KS5 Chemistry Curriculum

	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. 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.	ketones are then studied. Finally, carboxylic acids and their related functional groups, acyl chlorides and esters, are studied. The importance of acyl chlorides in organic synthesis is emphasised.	including amines, amides and amino acids. Chirality and optical isomerism is also introduced. Condensation polymerisation is also introduced and compared with additional polymerisation. The importance of carbon–carbon bond formation in organic synthesis 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 solids, including	spectroscopic areas of organic chemistry previously encountered This section demonstrates how analytical techniques introduced in Module 4 (infrared spectroscopy, mass spectrometry and elemental analysis) may be used in combination with NMR spectroscopy to provide evidence of structural features in molecules. The instrumentation methods of analysis studied during the A level course provide learners with an important base of knowledge,	for their external examinations.	

			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