This qualification is linear, with all of the assessments of the program of study occurring at the end of Year 13 during the summer exam season. Students will start this qualification in September of Year 12 following induction in the previous Summer Term, after GCSE examinations have been completed. Two tasks are set for completion over the summer so that prospective A level students have the chance to revise key knowledge, ideas, concepts, calculations and quantitative chemistry linked to experimental work, to best prepare them for the challenges of Advanced Level.

The content is divided between two members of staff as shown below

Year	Route 1	Route 2
12	2 periods per week	3 periods per week
	Module 1 Development of practical skills in chemistry PAGs 1.3,2.1,2.2,3.1,3.3 & 4.2	Module 1 Development of practical skills in chemistry PAGs 5.1, 5.3, 6.1 & 6.2
	Module 2 – Foundations in chemistry Module 3 – Periodic Table and Energy	Module 2 – Foundations in chemistry Module 4 – Core organic chemistry and analysis
13	3 periods per week	2 periods per week
	Module 1 Development of practical skills in chemistry PAGs 8.1,8.2,9.1,10.1,11.1 & 12.2	Module 1 Development of practical skills in chemistry PAGs 7.1 & 7.3
	Module 5 – Physical chemistry and transition elements	Module 6 – Organic Chemistry and analysis

Module 1 ‘ Development of practical skills in chemistry ‘

The PAG activities listed in the table above provide full coverage of the 1.2 requirements as outlined on the Practical Endorsement tracker.

1.1 is examinable content that can feature on Paper 1,2 and 3 are embedded throughout all the content of the specification.

1.2 forms part of the Practical Endorsement, which is reported at the end of the course and assessment using PAG tasks – see distribution in the route table above.

Module 2 is the ‘Foundations in chemistry ‘unit so clearly it must be taught before moving onto Modules 3 and 4 in Year 12 and modules 5 and 6 in Year 13. It acts as an important bridge into AS and A level chemistry from the study of chemistry within GCSE courses. It will provide students with a knowledge and understanding of the important chemical ideas that underpin the study A level chemistry.

Route 1 lays foundations in atomic structure, isotopes, quantitative chemistry, volumetric analysis and acid-base reactions and dovetails into the Module 3 and 5 content (inorganic and physical chemistry) for Paper 1*and 3 (aspects of Paper 2)

*see examination breakdown table below

Route 2 lays foundations in bonding, structure, molecular shape, intermolecular forces and dovetails into the Module 4 and 6 content (organic and analytical chemistry) for Paper 2 and 3 (aspects of Paper 1)

The change in periods per week from Year 12 and 13 is a reflection of the teaching time required.

Module 4 (H432 p29-40) has more content than Module 3 (p21-28) and Module 5 (p41-52) has more content then Module 6 (p53-63)

Examination breakdown

Content Overview	Assessment Overview	
Content is split into six teaching modules: • Module 1 – Development of practical skills in chemistry • Module 2 – Foundations in chemistry • Module 3 – Periodic table and energy • Module 4 – Core organic chemistry • Module 5 – Physical chemistry and transition elements • Module 6 – Organic chemistry and analysis Component 01 assesses content from modules 1, 2, 3 and 5. Component 02 assesses content from modules 1, 2, 4 and 6. Component 03 assesses content from all modules (1 to 6).	Periodic table, elements and physical chemistry (01) 100 marks 2 hours 15 minutes written paper	**37%** of total A level
	Synthesis and analytical techniques (02) 100 marks 2 hours 15 minutes written paper	**37%** of total A level
	Unified chemistry (03) 70 marks 1 hour 30 minutes written paper	**26%** of total A level
	Practical Endorsement in chemistry (04)	Reported separately (see Section

The aim of the A Level Chemistry course

Chemistry A – a content-led approach. A flexible approach where the specification is divided into topics, each covering different key concepts of chemistry. Teaching of practical skills is integrated with the theoretical topics and they're assessed both through written papers and, for A level only, the Practical Endorsement.

- develop essential knowledge and understanding of different areas of the subject and how they relate to each other
- develop and demonstrate a deep appreciation of the skills, knowledge and understanding of scientific methods
- develop competence and confidence in a variety of practical, mathematical and problem solving skills
- develop their interest in and enthusiasm for the subject, including developing an interest in further study and careers associated with the subject
- understand how society makes decisions about scientific issues and how the sciences contribute to the success of the economy and society (as exemplified in 'How Science Works' (HSW)).

Key features

- retains and refreshes the popular topics from the legacy OCR Chemistry qualification (H036)
- is laid out clearly in a series of teaching modules with Additional guidance added where required to clarify assessment requirements
- is co-teachable with the AS level
- embeds practical requirements within the teaching modules
- identifies Practical Endorsement requirements and how these can be integrated into teaching of content (see Section 5)
- exemplifies the mathematical requirements of the course (see Section 5)
- highlights opportunities for the introduction of key mathematical requirements (see Section 5d and the additional guidance column for each module) into your teaching
- identifies, within the Additional guidance how the skills, knowledge and understanding of How Science Works (HSW) can be incorporated within teaching.

Delivery

Route 1 - 2 periods per week in Year 12

Module 2 Foundations in Chemistry

Year	Section	Term	Topics	Paper
12	2.1 Atoms and reactions	Autumn	2.1.1 Atomic structure and isotopes 2.1.2 Compounds, formulae and equations 2.1.3 Amount of Substance 2.1.4 Acids This section builds directly from the GCSE courses. Important chemical skills are developed; writing chemical formulae, constructing equations and calculating chemical quantities using the concept of amount of substance. These ideas are essential for later modules.	1,2 and 3

Route 2 - 3 periods per week in Year 12

Module 2 – Foundations in Chemistry

Year	Section	Term	Topics	Paper
12	2.2 Electrons, bonding and structure	Autumn	2.2.1 Electronic structure 2.2.2 Bonding and structure This section builds directly from the GCSE courses by considering the central role of electrons in ionic, covalent and metallic bonding. This links to how bonding and structure contribute to properties of substances. Shapes of molecule and intermolecular forces (essential for module 4) are developed as well as the concept pf atomic orbitals.	1,2 and 3
	2.1 Atoms and reactions		2.1.5 Redox Taught here after as an understanding of oxidation states can be taught after key ideas of formulae and bonding have been comprehensively studied and applied in earlier 2.1 and 2.2	

Route 1 - 2 periods per week in Year 12

Module 3 Periodic Table and Energy

Year	Section	Term	Topics	Paper
12	3.1 The Periodic Table	Autumn/Spring	3.1.1 Periodicity 3.1.2 Group 2 3.1.3 The halogens 3.1.4 Qualitative analysis The content of Module 3 assumes knowledge and understanding from Module 2. Links strongly with atoms, moles, stoichiometry, acid & redox reactions and bonding and structure Periodic trends are studied to extend the understanding of structure from Module 2. Group trends and properties are looked at using Group 2 and 7 as typical metallic and non-metallic groups, allowing an understanding of redox reactions to developed further from the end of Module 2. A flavour of chemical analysis is introduced by identifying unknown ionic compounds.	1/3
12	3.2 Physical Chemistry	Spring	3.2.1 Enthalpy changes 3.2.2. Reaction Rates 3.2.3 Chemical equilibrium Physical chemistry is introduced here within an energy theme. Knowledge and understanding of the concepts and importance of enthalpy changes, their determination by experiments and cycles, chemical reaction rates and dynamic equilibria are taught here and then developed and applied further in Module 5. In addition, the integrated roles of these ideas are considered in ways of increasing yield, reducing energy demand and improving the sustainability of industrial processes.	1/3

Route 2 - 3 periods per week in Year 12

Module 4 Core Organic Chemistry

Year	Section	Term	Topics	Paper
12	4.1 Basic concepts and hydrocarbons	Autumn/Spring	4.1.1 Basic concepts of organic chemistry 4.1.2 Alkanes 4.1.3 Alkenes 4.2.1 Alcohols	2/3

	4.2 Alcohols, haloalkanes and analysis		4.2.2 Haloalkanes 4.2.3 Organic Synthesis 4.2.4 Analytical techniques The content of Module 4 assumes knowledge and understanding from Module 2. Links strongly with atoms, moles, stoichiometry, acid & redox reactions and bonding and structure. This module introduces fundamental organic chemistry and its applications. Students will be provided with a knowledge and understanding of the important chemical ideas that underpin theoretical and practical organic chemistry by looking at particular functional groups and synthesis of target molecules. Underpinning ideas of nomenclature, molecular representation, aliphatic hydrocarbons are explored in 4.1 and in 4.2 alcohols, haloalkanes, organic synthesis and instrumental techniques are developed.. The content in Module 6 assumes a knowledge and comprehension of Module 4	

Route 1 - 3 periods per week in Year 13

Module 5 – Physical Chemistry and the Transition elements

Year	Section	Term	Topics	Paper
12/13		Summer/Autumn	Module 5 assumes a knowledge and understanding of Module 2 and 3 and strongly links with atoms, moles, stoichiometry, acid & redox reactions and bonding and structure from Module 2 and Periodicity, Group 2 & 7, Enthalpy changes, reaction rates and equilibria from Module 3 Module 5 extends the areas of physical and inorganic chemistry taught in Module 2 and 3 and then later introduces and develops ideas of entropy, Gibbs free energy, electrochemical cells and transition metals.	1/3

13	5.1 Rates, equilibria and pH	Autumn	5.1.1 How fast? 5.1.2 How far? Rates and equilibria are further developed using a quantitative and graphical context in a theoretical and experimental sphere. 5.1.3 Acids, bases and buffers Developing ideas from Modules 2 and 3 in a further quantitative context outlined above.	
13	5.2 Energy	Spring	5.2.1 Lattice enthalpy Enthalpy cycles from module 3 are developed here to look at ionic compound properties. 5.2.2 Enthalpy and entropy Introduces and develops ideas of entropy, Gibbs free energy, 5.2.3 Redox and electrode potentials Assumes knowledge and comprehension of Module 2, 3 and 5.1.	
13	5.3 Transition metals	Spring	5.3.1 Transition elements 5.3.2 Qualitative analysis Redox chemistry is also developed here into titration and volumetric analysis	

Route 2 - 2 periods per week in Year 13

Module 6 – Organic Chemistry and analysis

Year	Section	Term	Topics	Paper
12/13		Summer/Autumn	Module 6 assumes a knowledge and understanding of Module 2 and 4 and strongly links with atoms, moles, stoichiometry, acid & redox reactions and bonding and structure from Module 2 and all content from Module 4 Module 6 introduces new functional groups, further develops ideas and practises organic synthesis. In addition, NMR spectroscopy and other analytical techniques are discussed in addition to those taught in Module 4 and integrated in their use and application.	2/3
12	6.1 Aromatic compounds, carbonyls and acids.	Summer	6.1.1 Aromatic compounds 6.1.2 Carbonyl compounds 6.1.3 Carboxylic acids and esters Aromatic hydrocarbon compounds are introduced and directing effects discussed. They are compared with alkenes from Module 4. Carbonyl chemistry is developed and highlighted in its importance in synthesis.	

			(Aldehydes and ketones are first seen in Module 4)	
13	6.2 Nitrogen compounds, polymers and synthesis	Autumn	6.2.1 Amines 6.2.2. Amino acids. Amides and chirality 6.2.3 Polyesters and polyamides 6.2.4 Carbon-carbon bond formation 6.2.5 Organic synthesis Focussing on organic nitrogen compounds as well as introducing optical isomers. Condensation polymerisation is compared to addition from Module 4. Organic synthesis from Module 4 and earlier in this module is further enhanced by looking at carbon – carbon bond formation and multistep syntheses. Further organic laboratory skills and techniques are taught which are underpinned in Module 4	
13	6.3 Analysis	Spring	6.3.1 Chromatography and qualitative analysis 6.3.2 Spectroscopy 6.3 develops and complements spectroscopic content from topic 4.2.4 from Module 4 as well as other simple chemical tests for functional groups. All spectroscopic are then applied in an integrated approach.	

Assessment at end of topics – At the end of each topic, there is an end of topic assessment, this has been created using Kerboodle online resources (Oxford publisher, affiliated with course).