

CHEMISTRY

Examination Board Specification:

Edexcel 8CH01/ 9CH01

Why Study Chemistry?: The Chemistry Department follows the Edexcel syllabus due to the depth of syllabus content, balanced practical component and relevance to topical issues. This course enables students to extend their knowledge and understanding of Chemistry through an appreciation of both its patterns and its wider applications. The principal areas of study are inorganic, organic and physical chemistry and the syllabus content seeks to stimulate interest in Chemistry and encourages students to use chemical principles and concepts to interpret and explain phenomena in unfamiliar situations. A significant amount of time is spent on practical exercises to develop manipulative skills but students will also be required to collect and process data and to interpret qualitative observations. The majority of exercises will involve the completion of numerical problems, multiple choice, short answer questions and responses to comprehension exercises. The most successful students will be those who are analytical in thought and are able to draw freely on concepts and ideas to solve problems. Students are encouraged to read publications such as *New Scientist*, *Chemistry Review* and *RSC Chemnet*.

Content and Assessment of the Course:

AS Content			
Paper 1	Core Inorganic and Physical Chemistry		
The first unit builds on students' pre-existing knowledge of formulae, equations and amounts of substance from GCSE. The atomic structure and the periodic table are taught alongside these topics and pupils are given a firm understanding of bonding. The unit concludes by starting to look at redox reactions. Some questions will assess conceptual and theoretical understanding of experimental methods of core practicals.			
Paper 2	Core Organic and Physical Chemistry		
Developing on pupils' knowledge of formulae and bonding, shapes of molecules and ions are introduced in this unit. Terms including intermediate bonding and bond polarity are examined and intermolecular forces are described. Chemical equilibria and energetics are introduced to look qualitatively at why reactions occur. The paper covers the entirety of organic chemistry at AS level and looks at the methods used to analyse and identify these compounds in a modern laboratory including mass spectroscopy and the use of infra-red spectra. Some questions will assess conceptual and theoretical understanding of experimental methods of core practicals.			

Advanced Level			
Paper 1	Advanced Inorganic and Physical Chemistry	1 ¾ hour examination	30%
This paper will examine all topics from AS Paper 1 as well as further material on kinetics and equilibria. The concept of redox equilibria is introduced having already looked at redox reactions and simple equilibria theory. Equilibria is extended further into the realms of thermodynamics and concept of entropy, or disorder of systems. Acid/base equilibria are described and the mathematical concepts behind linked to work carried out in the AS Chemistry course. The unit concludes by looking at the chemistry of the transition metals, the complexes they form and their applications to catalysis and industrial chemistry.			
Paper 2	Advanced Organic and Physical Chemistry	1 ¾ hour examination	30%
This paper will include all topics covered in Paper 2 of the AS course with some further organic chemistry – chirality, carbonyl compounds, carboxylic acids and their derivatives – and spectroscopy and chromatography are studied to summarise further methods of chemical analysis. The study of organic compounds concludes through looking at arenes, nitrogen compounds and organic synthesis.			
Paper 3	Chemistry Laboratory Skills II	2 ½ hour examination	40%
Questions in this paper may draw on any of the topics in this specification.			
<input type="checkbox"/> The paper will include synoptic questions that may draw on two or more different topics listed. <input type="checkbox"/> The paper will include questions that assess conceptual and theoretical understanding of experimental methods (indirect practical skills) that will draw on students' experiences of the core practicals.			

Entrance Requirements: A minimum of a grade 7 in GCSE Chemistry, in GCSE Additional Science or an equivalent grade in the Chemistry component of the Dual Award Science is expected. If a candidate is unfamiliar with the concept of 'the mole' as encountered in triple science GCSE courses there will be an expectation that the student will undertake some Summer work before starting on the AS course. In addition, a good mathematical background, the ability to express ideas clearly and coherently in written form and an ability to identify patterns within data are desirable.

Additional Information: Students will have the opportunity to enter the Cambridge Chemistry Challenge at the end of Year 12 and the Royal Society of Chemistry's Olympiad in Year 13. In addition the Department aims to run a residential trip to Bristol ChemLabs and experience undergraduate level practical chemistry in the Summer Term of Year 12.