CHEMISTRY

Examination Board Specification: Edexcel 9CH01

Why Study Chemistry?:
A Chemistry qualification opens doors to a wide range of career options, both in and out of the lab. You could help develop a life-saving vaccine or invent a new way to cut air pollution or create a new type of biodegradable plastic. Chemical scientists all over the world are working on climate change, human health, sustainable energy…issues that impact us all. *What do you care most about?*

- Changing lives by developing new medicines, vaccines and medical devices
- Fixing the future by finding ways to cope with the increasing pressures on energy, food, water and other scarce natural resources and to live more sustainably
- Innovating industry by developing sustainable products and materials, and improving processes
- Challenging opinions through promoting scientific research and lobbying for policy changes
- Being the catalyst by inspiring others through teaching chemistry
- Working outside the lab in areas like the law, finance, journalism, the government and teaching

You will be part of a workforce around 327,500-strong, using chemistry to develop products, solve problems and help generate £60.5 billion for the UK economy each year (2023).

Content and Assessment of the Course:
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 pace of teaching is fast owing to covering a vast amount of content. A-Level specifications are designed in a way that requires students to have retained fundamental GCSE concepts. The most successful students will be those who are able to work independently, are analytical in thought and are able to draw freely on concepts and ideas to solve problems and apply ideas to new situations. Students are encouraged to utilise all of their resources through the Directed Reading Programme.

The course is split into two and taught by two teachers, one teacher focuses on material for Paper 1 and the other will focus on material covered in Paper 2 (see table below). Topics are taught in the order in the table, whilst topic titles will be familiar to students, some content encountered will be new or of a deeper understanding. Please note, we do not offer AS qualifications and teach the course in a linear format. Throughout the course, students will be assessed during and following the completion of each topic. At the end of the Lower Sixth, students will complete internal Examinations. The results obtained from the Lower Sixth Examinations will heavily influence the decisions in awarding UCAS grades when applying for University. Whilst coursework is not required, students will be judged on their practical competency and assessed via the examinations. Students will compile their practical evidence by recording data in lab books that we will provide.

Lower Sixth Content		
Paper 1 (Teacher 1)	**Core Inorganic and Physical Chemistry**	**End of Lower Sixth Examination: 1 hour (approx) internal examination**
• Topic 1: Atomic Structure and the Periodic Table • Topic 2: Bonding and Structure • Topic 3: Redox I • Topic 4: Inorganic Chemistry and the Periodic Table • *Topic 5: Formulae, Equations and Amounts of Substance** • Topic 8: Energetics I • Topic 10: Equilibrium I • Topic 11: Equilibrium II • Topic 12: Acid-base Equilibria		
Paper 2 (Teacher 2)	**Core Organic and Physical Chemistry**	**End of Lower Sixth Examination: 1 hour (approx) internal examination**
• *Topic 2: Bonding and Structure** • *Topic 3: Redox I** • Topic 5: Formulae, Equations and Amounts of Substance • Topic 6: Organic Chemistry I • Topic 7: Modern Analytical Techniques I • Topic 9: Kinetics I • Topic 16: Kinetics II		

**These topics are taught by the other teacher.*

Advanced Level (Upper Sixth Content)			
Paper 1 (Teacher 1)	**Advanced Inorganic and Physical Chemistry**	**1 ¾ hour examination**	**30%**
This paper will examine all topics from the Lower Sixth Paper 1. 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 Lower Sixth 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. • Topic 11: Equilibrium II • Topic 12: Acid-base Equilibria (continued from the Lower Sixth) • Topic 13: Energetics II • Topic 14: Redox II • Topic 15: Transition Metals			
Paper 2 (Teacher 2)	**Advanced Organic and Physical Chemistry**	**1 ¾ hour examination**	**30%**
This paper will examine all topics from the Lower Sixth Paper 2 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. • Topic 16: Kinetics II (continued on from the Lower Sixth) • Topic 17: Organic Chemistry II • Topic 18: Organic Chemistry III • Topic 19: Modern Analytical Techniques II			
Paper 3 (Combined)	**Chemistry Laboratory Skills II**	**2 ½ hour examination**	**40%**
Questions in this paper may draw on any of the topics in this specification. • The paper will include synoptic questions that may draw on two or more different topics listed. • 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.
Students will not be disadvantaged if they have completed a different exam board for their GCSE, however, they may find A-Level Chemistry to be more challenging if double award was obtained instead of triple.

Additional Information:
There is an expectation that students attempt to complete the Summer Work that is circulated to enable a strong start to the course. A good mathematical background is expected, the ability to express ideas clearly and coherently in written form and an ability to identify patterns within data are desirable. A baseline assessment is given at the beginning of the course to assess "readiness" to the course. This information is used to help provide mentoring support (when required) to help students improve. If a student is unfamiliar with the concept of 'the mole' as encountered in triple science GCSE courses, then Chemistry will be even more challenging.

Students will have the opportunity to enter the Cambridge Chemistry Challenge at the end of Lower Sixth and the Royal Society of Chemistry's Olympiad in the Upper Sixth. We also enter teams in the RSC Schools' Analyst and Chemistry Cambridge Race Competitions.

The following table summarises the provision of textbooks that are issued to students at WHSB.

In addition, students are also provided with course booklets for each topic throughout.

Resource	ISBN number	Issued to students
Edexcel A Level Chemistry Student Book 1	**978-1447991168**	**Yes**
Edexcel A Level Chemistry Student Book 2	**978-1-447-991175**	**Yes**
Calculations in AS / A Level Chemistry	**978-0582411272**	**Yes**
Course booklets for each topic – includes exercises and examination style questions	**N/A**	**Yes**
Edexcel Student Guide – Practical Chemistry	978-1-4718-8567-9	No
Alternate version: Edexcel A Level Chemistry Student Book 1 (Hodder)	978-1471807466	No
Alternate version: Edexcel A Level Chemistry Student Book 2 (Hodder)	978-1471807497	No
Revise Edexcel AS/A Level Chemistry Revision Workbook: For the 2015 Qualifications	978-1447989943	No
*Head Start to A Level Chemistry (with Online Edition) (CGP A Level Chemistry)**	978-1782942801	No

**CGP/ revision guides, albeit useful, are not a substitute for the textbook.*