

SCIENCE - CHEMISTRY

KS5 (AQA AS AND A-LEVEL CHEMISTRY)

Course Overview

The A-Level Chemistry course delves into the fundamental principles that govern the world around us. Through a combination of theoretical knowledge and practical experience, we look at the building blocks of matter, how they interact, and explain why chemical reactions take place.

The course is divided into three main sections: physical, inorganic, and organic chemistry. The physical chemistry part of the course explains the fundamental processes that take place in every chemical reaction, starting with the structure of the atom and electronic configuration, prediction of products, and the manipulation of conditions that allow industrial processes to work at a profit. Inorganic chemistry focuses on the general properties of elements and their compounds, and organic chemistry looks at carbon based molecules, their interactions, and their properties.

This rigorous and rewarding course equips you with a strong foundation in chemical principles and investigative thinking. Chemistry A level prepares you for careers in medicine, pharmacy, materials science, forensics, engineering, and of course, chemistry itself.

YRI3



Course Content

Physical:-

- Thermodynamics
- Rate Equations
- Equilibrium constant and K_p for homogeneous systems
- Electrode potentials and electrochemical cells
- Acids and bases

Inorganic:-

- Properties of Period 3 elements and their oxides
- Transition metals
- Reactions of ions in aqueous solution

Organic:-

- Optical isomerism
- Aldehydes and ketones
- Carboxylic acids and derivatives
- Aromatic chemistry
- Amines
- Polymers
- Amino acids, proteins and DNA
- Organic synthesis
- Nuclear magnetic resonance spectroscopy
- Chromatography

Skill Development

Assessment objectives (AOs) are set by Ofqual and are the same across all AS and A-level Chemistry specifications and all exam boards. The exams will measure how students have achieved the following assessment objectives.

AO1: Demonstrate knowledge and understanding of scientific ideas, processes, techniques and procedures.

AO2: Apply knowledge and understanding of scientific ideas, processes, techniques and procedures:

- in a theoretical context
- in a practical context
- when handling qualitative data
- when handling quantitative data.

AO3: Analyse, interpret and evaluate scientific information, ideas and evidence, including in relation to issues, to:

- make judgements and reach conclusions
- develop and refine practical design and procedures.

As well as gaining an excellent grounding in the knowledge and skills needed to succeed at A level chemistry, students will develop their skills in critical thinking, attention to detail, and problem-solving. The course is accessible without the need for A level mathematics and students find that their level of numeracy improves as they study. A full range of practical skills is taught during the course, ensuring that students are confident in the lab and can successfully perform the procedures required by any related courses in further education.

Chemistry students often have the desire to understand how things work. The subject requires commitment and resilience, as well as good time management. Students often find that their commitment is rewarded by the knowledge and confidence gained by mastering a challenging concept.



Specification link

<https://www.aqa.org.uk/subjects/science/as-and-a-level/chemistry-7404-7405/specification-at-a-glance>

When and how assessment of learning will happen

Exam question based tests are given at the end of each topic, which is approximately once every half term. These tests are 60 minutes long and are taken under exam conditions. The test paper is always made up of past examination questions. Thorough, constructive feedback is given after every test.

The practical endorsement is assessed continuously over the full two year course. This accreditation is added to their certificate. Theory and application of the practical material is assessed in Paper 3 of the final examination in Year 13.

More informal formative assessment is carried out as part of the teaching and includes mini-tests, examination question practice, discussion, and other methods as appropriate.

The final exams/ assessment

The final assessment at the end of Year 13 is made up of 3 two hour written exams:

Paper 1

- Relevant physical chemistry topics (sections 3.1.1 to 3.1.4, 3.1.6 to 3.1.8 and 3.1.10 to 3.1.12)
- Inorganic chemistry (section 3.2)
- Relevant practical skills

Paper 2

- Relevant physical chemistry topics (sections 3.1.2 to 3.1.6 and 3.1.9)
- Organic chemistry (section 3.3)
- Relevant practical skills

Paper 3

This paper also includes a multiple choice section

- All content from the course
- Any practical skills





Independent Learning Expectations

An A-Level chemistry student is expected to be a proactive and independent learner. Learning expectations include:

- Maintain a complete and organised set of notes
- Complete all the practice exercises given in class, as well as all the questions in the relevant chapter of the textbook
- Read the relevant background material from the recommended textbook.
- Ensure that every examination question attempted is mastered – not just understanding the error but making sure the mistake is not repeated.
- Actively look for examination questions on the suggested websites to support areas of weakness.
- Make good use of the support available by communicating with staff promptly if there is a problem
- Ensure that definitions, mechanisms, and other essential content are memorised promptly, and knowledge checked regularly to ensure retention.
- Read around the subject is using the books made available as well as internet websites.
- Become familiar with the specification
- To work through at improving areas of weakness identified in tests by working through extra questions.

Useful Information

Google Classroom is used heavily in the course. Revision material, extra reading, podcasts, internet links, past tests, and lesson PowerPoints are regularly put into the Google class and it forms a useful revision resource in the final year.

An appropriate textbook is essential. These are free for Pupil Premium students. We recommend the Oxford AQA Chemistry text by Lister and Renshaw.

[AQA Chemistry: A Level \(AQA A Level Sciences 2014\) Paperback](#)

Useful websites include:

<https://www.chemguide.co.uk/>

<https://www.physicsandmathstutor.com/>

<https://www.savemyexams.com/>

<https://www.rsc.org/>

<https://www.primrosekitten.com/pages/aqa-a-level-chemistry>

https://www.youtube.com/@Primrose_Kitten

<https://chemcollective.org/>