



# A Level Chemistry

## Why study Chemistry?

To gain fundamental understanding of the processes and phenomena that makes up all materials and is the foundations of life itself. Advances in both Physics and Biology are often intertwined with, and reliant upon, chemical ideas and knowledge. Humankind will benefit greatly from the new materials and medicines which inevitably will come from our advancing awareness of the fundamental nature of matter. This course will help students to lay the groundwork for further study in courses such as chemistry, medicine and pharmacy.

## What is the course structure?

Students will study three areas of Chemistry: Inorganic, Organic and Physical. Overall, at least 15% of the marks for all A-level Chemistry courses will require the assessment of practical skills. Students will sit the A-level exams at the end of their A-level course.

### A Level Examinations

In the first year, students explore the fundamental principles that form the basis of chemistry such as atomic structure, bonding, periodicity and an introduction to organic chemistry. Students also look at the applications of these principles. In the second year, students develop further the concepts and principles introduced through topics including: equilibria, polymers, aromatic chemistry, thermodynamics, energetic chemistry and inorganic chemistry.

#### Paper 1

What's assessed

- Relevant physical chemistry topics (Atomic structure, Amount of substances, Bonding, Energetics, Chemical equilibria and Le Chatelier's principle sections, Oxidation, reduction and redox equations, Thermodynamics, Equilibrium constant  $K_c$  for homogeneous systems and Acids and bases)
- Inorganic chemistry (Periodicity, Group 2, the alkaline earth metals, Group 7, the halogens, Properties of period 3 elements and their oxides, Transition metals and Reactions of ions in aqueous solution)
- Relevant practical skills

Assessed

- Written exam: 2 hours
- 105 marks
- 35% of A-level

Questions

105 marks of short and long answer questions

#### Paper 2

What's assessed

- Relevant physical chemistry topics (Amount of substances, Bonding, Energetics, Kinetics, Chemical equilibria and Le Chatelier's principle sections and Rate equations)
- Organic chemistry (Introduction to organic chemistry, Alkanes, Halogenoalkanes, Alkenes, Alcohols, Organic analysis, Optical isomers, Aldehydes and ketones, Carboxylic acids and derivatives, Aromatic chemistry, Amines, Polymers, Amino acids, proteins and DNA, Organic synthesis, NMR spectroscopy and Chromatography)
- Relevant practical skills

#### Assessed

- Written exam: 2 hours
- 105 marks
- 35% of A-level

#### Questions

105 marks of short and long answer questions

#### **Paper 3**

#### What's assessed

- Any content
- Any practical skills

#### Assessed

- Written exam: 2 hours
- 90 marks
- 30% of A-level

#### Questions

40 marks of questions on practical techniques and data analysis

20 marks of questions testing across the specification

30 marks of multiple choice questions

## Which activities will I be engaged in during the course?

You will enjoy this course if you enjoy understanding why things happen at a fundamental level, looking at how and why elements, mixtures and compounds react together and understanding why different substances have their specific properties. You will also be involved in many activities and learn new techniques and skills specific to Chemistry. You will carry out experimental work, in differing contexts, to illustrate the theoretical principles of Inorganic, Physical and Organic chemistry.

**To achieve the higher grades in this course you must be prepared to put in the hours of work necessary to be skilled in evaluating abstract concepts and constructing your own mental models of the processes involved.**

The learning habits you might be asked to draw upon include:

- Reading around the subject area to gain insight into current accepted knowledge in addition to new theories and advances.
- Evaluating your understanding and identifying any misconceptions within a topic.
- Formulating questions, posing problems and investigating ways to find solutions.

## How can I prepare for the course?

By attending an induction session at the end of Year 11 where you will review relevant content and complete a baseline knowledge assessment. At this session you will also receive a suggested reading list and resources to assist you in your independent study.

Further information: Mr C Stuart (Head of Science)