

# A level Chemistry

## Introduction – an outline of the course

Welcome to A level Chemistry. During your time in the Sixth Form you will study aspects of Physical, Organic and Inorganic chemistry that will build upon and develop the skills that you have developed in Key Stage 4. The assessment at the end of Year 13 consists of three exams, in which you can show your knowledge and understanding of the topics that you cover. There will also be more of an emphasis on applying your knowledge to unfamiliar situations.

There is no NEA work in A level Chemistry but just like at GCSE there are required practicals that you must complete. During these practicals you will gain skills and competencies that you may develop if you move onto university or a science-based career.

The A level grade that you will receive is based on your performance in three two-hour exams. You will also be awarded a practical endorsement to gain the full A level.

## What will we be studying in the first half term?

In September you will start by looking at the fundamental concepts in Chemistry that will serve as a foundation to build your knowledge and skills. There are two main topics; Atomic structure and bonding and Amount of substance.

### Amount of substance

In this topic you will be developing your knowledge of chemical equations, the mole and Avogadro's constant. You will then learn how to use this in calculations that will allow you to determine concentrations and masses. These calculations are a development of the work that you covered at GCSE. They become more complex as you progress but don't worry, your teachers are here to support you every step of the way.

You will be carrying out titration experiments and making standard solutions so that you will be able to use your theoretical calculation skills in a real-life context.

The last part of this topic is to revisit empirical and molecular formulae and then to learn how to calculate percentage yields and atom economy. In this final section you will discover why it is important that chemists try to develop ways that minimise by-products and reduce waste.

### Atomic structure and bonding

In this topic you will move away from the simplistic GCSE model of electron arrangement and learn that electrons are found in orbitals. You will find out how we know about isotopes and then go onto develop your knowledge of bonding and structure.

We will be spending time looking at a technique called mass spectrometry and finding out how we can calculate the mass on a single ion. You will also learn that the majority of elements have isotopes and how we can calculate their mass, which then determines the mass of each element.

You will then look at the evidence and trends across the periodic table that show us how the electron arrangement is different to your current understanding.

Next you will look at bonding between atoms and forces of attraction between molecules and learn how this influences the structure and properties of materials. You will also spend some time on learning about the shapes of different molecules.

## What can I do that will help me prepare for A level Chemistry?

One of the important ways that you can prepare is to make sure that you are familiar with the Chemistry that you have learnt for your GCSE Science or Chemistry. Some of the topics that you will study at A level expect you to have a good understanding of the work that you have covered during your GCSE. Make sure that you keep your knowledge organisers, revision guide or exercise book as a reminder of the work that you have covered.

You may wish to use some of your summer to carry out some background reading and preparation. You could complete an on-line university course (Mooc). Log onto Unifrog to find out more:

<https://www.unifrog.org/student/moocs/start>

Or you could read some of the articles about how chemistry is used in the world:

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

<https://www.the-scientist.com/tag/chemistry>

There are numerous books that you may be able to borrow or you can look at YouTube and search for ["chemistry BBC four"](#).

## Summer Gap Task and where to find this

The best way to prepare for your A level Chemistry is to complete the summer gap task that has been set.

If you read the booklet and complete the tasks over the summer, then you will be using the skills that you have developed during your GCSEs. It is easy to let these skills lapse which will make the start of your A levels more difficult, because you will be trying to remember what you did at GCSE and learn new knowledge and skills.

On the [school website](#), if you click on Sixth Form and follow the list until you see Year 11 into 12 Gap Tasks. Click on this and find the Chemistry task which is a PDF booklet.

The booklet has been produced by the exam board (AQA) that you will be studying. It starts with an introduction, suggestions about what Chemistry can lead to, a description of the course and exams and links to helpful websites.

The tasks are designed to help you remember what you learnt at GCSE and give you exercises to practice and develop these skills.

The topics include:

the periodic table	important vocabulary	formula and atomic mass
Ions and molecules	balancing equations	moles
empirical formula		

Each section has a short description or explanation followed by a few questions. At first glance this appears to be a lot of work but it won't take you long to complete and you will be rewarded by having a better understanding of Chemistry when you start the A level course.

You don't have to complete this work in one go. Why not wait until you have a rainy day?

We are really looking forward to seeing you in September and working with you so that you achieve your goals and aspirations.