

A-level Chemistry Course Information

Course Overview

- **Exam Board** – AQA
- **Usual Age Range** – 16 to 19
- **Qualification** – One A-level
- **Curriculum Time** – Six 50-minute lessons per week in class plus work in Independent Learning Time
- **Assessment** – Three 2-hour examinations taken at the end of the two-year course
- **Grading** – Reformed six-point A-level scale of A*, A, B, C, D, E.
- **Full specification** -
<https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-7404-7405-SP-2015.PDF>

Curriculum Intent

The **intent** of A-level Chemistry is to give UTC students an opportunity to build on their GCSE studies to develop a broad understanding of the content within the following three fundamental areas that are further split into topics and to be able to apply this understanding to explain chemical phenomena:

- Physical Chemistry
- Inorganic Chemistry
- Organic Chemistry

These three fundamental areas are revisited again in the second year of the course where ideas are extended to an advanced level.

In addition to learning the content in each topic at A-level the intention is to learn how to draw together different areas of knowledge and understanding within answers to questions. This breadth is assessed in the third examination paper.

At the UTC we specifically intend students to appreciate chemistry's relevance to the world of work, in particular healthcare science. Healthcare science **careers** are explicitly taught within relevant topics in the A-level Chemistry sequence of learning. Students will also have direct first-hand experience of our healthcare science partners through project days and other aspects of UTC life such as our extensive UTC extra programme. A variety of careers outside this specialism are also taught in appropriate topics. The intent is to motivate students to pursue further study in a chemistry related subject beyond A-level. Suggested **destinations** after completion of this course include progression onto courses such as medicine or pharmacy. Some students aiming for such a course might choose to study Medical Science as a fourth subject alongside their three A-levels.

Throughout A-level Chemistry students are encouraged to develop their **literacy skills**. Students are regularly exposed to reading material in class and extended writing activities such as experimental write ups. Extended response questions allow students to demonstrate their ability to construct and develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured. The chemical literacy level of this course is not underestimated as there are long answer questions in all three examination papers. Through the explicit teaching of specific chemistry key words as each topic is taught students demonstrate their understanding of a growing chemistry vocabulary building on what was taught at GCSE by carefully designed written tasks, as well as verbally through questioning techniques used by their teacher. This **love of reading** is further developed by both non-fiction and fiction titles that have been carefully selected by their chemistry teachers that are available to borrow in our Learning Resource Centre. It is often found that by A-level the students are reading the same titles as their teachers

and this passion is shared further through our UTC extra programme or through students choosing scientific titles in their Extended Project Qualification.

Like GCSE Chemistry, although to at least Higher GCSE Mathematics standard, the following five fundamental **numeracy** threads running through all A-level sciences are taught via the context of A-level Chemistry. These are reinforced further albeit through a complementary subject in A-level Biology and A-level Physics:

- Arithmetic and numerical computation
- Handling data
- Algebra
- Graphs
- Geometry and trigonometry

For example, students are taught how to calculate the rate of change from a graph showing a linear relationship. In A-level Biology they are taught to use a gradient to calculate the rate of transpiration. In A-level Chemistry a gradient could be used to calculate the rate constant of a zero-order reaction. Whilst in A-level Physics a gradient could be used to calculate the acceleration which is the rate of change of velocity. Our students are well prepared in chemical numeracy as 20% of the marks in A-level Chemistry examinations now requires such a skill.

The students at our UTC experience more than the twelve required practical activities that the examination board requires. At this UTC students achieve the practical endorsement so are well prepared for a destination that requires this as part of the admissions process. Students are engaged in chemistry because they have the opportunity to complete practical work.

Remote Learning and Revision

Students will benefit from additional study on-site and at home using their personal copy of their Oxford University Press Textbook provided by the UTC.

Students can communicate with the teacher via the message function on Teams if absent from school and well enough to do some work.

AQA Practice Papers -

<https://www.aqa.org.uk/subjects/science/as-and-a-level/chemistry-7404-7405/assessment-resources?f.Sub-category=%7CF=Sample+papers+and+mark+schemes>

Curriculum Overview

The learning in A-level Chemistry is sequenced as follows.

Note: the full Curriculum Plans are available on request to info@nefuturesutc.co.uk

Revision Resources – Click on the following for links to your Kerboodle study guide

Year 12

[1 Atomic structure](#)

[2 Amount of substance](#)

[3 Bonding](#)

[4 Energetics](#)

[5 Kinetics](#)

[6 Equilibria](#)

[7 Oxidation, reduction and the redox reactions](#)

[8 Periodicity](#)

[9 Group 2, the alkaline earth metals](#)

[10 Group 7\(17\), the halogens](#)

[11 Introduction to organic chemistry](#)

[12 Alkanes](#)

[13 Halogenoalkanes](#)

[14 Alkenes](#)

[15 Alcohols](#)

[16 Organic analysis](#)

Year 13

[17 Thermodynamics](#)

[18 Kinetics](#)

[19 Equilibrium constant](#)

[20 Electrode potentials and electrochemical cells](#)

[21 Acids, bases and buffers](#)

[22 Periodicity](#)

[23 The transition metals](#)

[24 Reactions of inorganic compounds in aqueous solutions](#)

[25 Nomenclature and isomerism](#)

[26 Compounds containing the carbonyl group](#)

[27 Aromatic chemistry](#)

[28 Amines](#)

[29 Polymerisation](#)

[30 Amino acids, proteins, and DNA](#)

[31 Organic synthesis and analysis](#)

[32 Structure determination](#)

[33 Chromatography](#)