



## Student Guide GCE Chemistry

### Why Study Edexcel GCE Chemistry?

This course give you the opportunity to develop the skills and understanding to make decisions about the way chemistry affects your everyday life by applying concepts into contemporary areas of chemistry including:

- climate change
- green chemistry
- pharmaceuticals
- chemistry research

In addition, a GCE in Chemistry allows you to develop a range of generic skills requested by both employers and universities. For instance, a successful GCE level chemist will be an effective problem-solver and be able to communicate efficiently both orally and with the written word. Handling data will be a key part of your work, allowing you to demonstrate information retrieval skills as well as use of numeracy and ICT. You will build up a range of practical skills that require creativity and accuracy as well as developing a firm understanding of health and safety issues. As chemistry is a subject in which much learning stems from experimental work it is likely that you will need to work effectively as part of a group, developing team participation and leadership skills. As you become more skilled you will take responsibility for selecting appropriate qualitative and quantitative methods, recording your observations and findings accurately and precisely as well as critically analysing and evaluating the methodology, results and impact of your own and others' experimental and investigative activities.

### What do I need to know, or be able to do, before taking this course?

The qualification builds on the knowledge, understanding and process skills that you achieved in GCSE Science, Additional Science and Chemistry, or applied science courses such as the BTEC First Certificate in Applied Science. It is expected that you should have at least the equivalent of a GCSE grade C in Chemistry or Additional Science, and a GCSE grade C in Mathematics. In chemistry you will need to be able to communicate effectively, be able to carry out research, work

independently and critically think about problems. Good practical skills are also important as chemistry is a very practical subject.

## What will I learn?

Edexcel GCE Chemistry gives you the opportunity to study a core of key concepts in greater detail. Many of the ideas first covered at GCSE will be revisited but with a greater emphasis on explaining rather than simply describing the behaviour of molecules. While studying GCE Chemistry you will develop practical skills that include making observations, collecting data, analysing experimental results and formulating conclusions. You will also gain an appreciation of how scientific models are developed and evolve, the applications and implications of science, the benefits and risks that science brings and the ways in which society uses science to make decisions.

## Is this the right subject for me?

AS or A level Chemistry is suitable if you:

- have an interest in, and enjoy chemistry
- want to find out about how things work in the real world
- enjoy applying your mind to solving problems
- want to use chemistry to progress onto further studies in Higher Education or support other qualifications or enter chemistry-based employment.

## How will I be assessed?

### AS Level

You will complete a written exam that lasts for 90 minutes for each of Units 1 and 2. The papers will contain objective questions, short answer questions and extended answer questions. Each Unit contributes 40% of the overall AS grade. For Unit 3 you will complete a series of up to 12 practicals. Your best 3 scores are used for the Unit 3 mark. This contributes 20% overall to your AS grade.

### A Level

You will complete a written exam that lasts for 100 minutes for each of Units 4 and 5. The papers will contain objective questions, short answer questions and extended answer questions. Each Unit contributes 40% of the overall A2 grade. For Unit 6 you will complete a series up to 12 practicals. Your 3 best scores are used for the Unit 6 mark. This contributes 20% overall to your A2 grade.

## What can I do after I've completed the course?

Whilst many job opportunities specifically using chemistry require higher qualifications, most laboratory-based jobs benefit from a chemistry

qualification, for instance dental assistant or veterinary assistant. Many employers view success at GCE Chemistry as a clear indication of sound academic ability.

Many university courses have a significant proportion of chemistry content and a GCE in Chemistry from Edexcel is excellent preparation for such further study. UK HE institutions currently offer over 200 courses where chemistry is the primary subject. Often these courses can include an additional year's study, either in industry or at a university abroad. Some courses can include study in other related areas. Examples include:

- chemistry with medicinal chemistry
- chemistry with forensic science and toxicology
- chemistry with pharmacology.

Over 500 additional courses contain a notable element of chemistry as well as allowing a degree of breadth of study. These include:

- chemistry and sports science
- chemistry and politics
- chemistry with computer science.

In addition a number of other courses either specifically require or find it desirable to have a GCE in Chemistry. These include courses such as chemical engineering, medicine, veterinary medicine, biological sciences, environmental science, pharmacy and dentistry.

## Next steps!

- Visit websites to find out more about careers involving GCE Chemistry:
  - Royal Society of Chemistry for careers, courses and industrial placements  
<http://www.rsc.org/Education/SchoolStudents/index.asp>
  - Association of the British Pharmaceutical Industry (ABPI) careers website <http://www.abpi-careers.org.uk/>
- Discuss studying this subject with your chemistry or science teacher(s).
- Visit your careers office to find out more about careers and Higher Education courses that need GCE Chemistry.
- Visit websites to find out what courses are available at HE which include chemistry
  - UCAS website [www.ucas.com](http://www.ucas.com)
  - Specific university websites, such as Bristol University School of Chemistry <http://www.chm.bris.ac.uk/> or Surrey University School of Biomedical and Molecular Sciences <http://www.surrey.ac.uk/SBMS/>
- Visit the Edexcel website, [www.edexcel.org.uk](http://www.edexcel.org.uk) to obtain a full copy of the Edexcel GCE in Chemistry specification.

## AS UNIT 1

### Topic

- 1.1 Formulae, equations and amounts of substance
- 1.2 Energetics
- 1.3 Atomic structure and the periodic table
- 1.4 Bonding
- 1.5 Introductory organic chemistry

## AS UNIT 2

### Topic

- 2.1 Shapes of molecules and ions
- 2.2 Intermediate bonding and bond polarity
- 2.3 Intermolecular forces
- 2.4 Redox
- 2.5 The periodic table – groups 2 and 7
- 2.6 Kinetics
- 2.7 Chemical equilibria
- 2.8 Organic chemistry
- 2.9 Mechanisms
- 2.10 Mass spectra and IR
- 2.11 Green chemistry

## A2 UNIT 4

### Topic

- 4.1 How fast? – rates
- 4.2 How far? – entropy
- 4.3 Equilibria
- 4.4 Application of rates and equilibria
- 4.5 Acid/base equilibria
- 4.6 Further organic chemistry
- 4.7 Spectroscopy and chromatography

## A2 UNIT 5

### Topic

- 5.1 Redox and the chemistry of the transition metals
- 5.2 Organic chemistry – arenes, nitrogen compounds and synthesis

For further information please see: Mrs E Shapiro