

Thinking about choosing to study Chemistry at Advanced level?

or

Already studying it and wondering what your next step might be?

This worksheet has been designed to help you consider how you can use what you learn from an Advanced level course in Chemistry in your future career planning.

+ What to study it with?

When choosing to study A level courses full time it is usual to study four subjects at AS level in the first year then three at A2 level in the second year. It is also possible to study some subjects via the vocationally related route (Applied A level double awards and BTEC Diplomas). Chemistry would come under Science on this route. The other subjects you choose to combine with Chemistry may have an influence upon what you can choose beyond Advanced level, so check out your choice. Although some Advanced level subjects require a good grade at GCSE as a foundation for study at the advanced level, others can be studied from scratch. It's a good idea to check this out before finalising your Advanced level course choices.

CAREER WARNING

* CHEMISTRY

Studying any Advanced level course will give you two main things, knowledge about the content of the subject (the study of atomic structure and transformation, atoms, compounds, etc.) and skills in how to deal with that content. Although you may not need to remember the content for very much longer than your course, the skills you develop can be built on and used throughout the rest of your life.

MIX & MATCH +

Chemistry is usually studied alongside other sciences and combines particularly well with Biology for students wishing to enter scientific careers. With the addition of Physics, a much wider range of science careers are possible. Taking Physics and Maths with Chemistry provides the entry requirements for the widest range of career options, including scientific jobs, engineering and technology and also career areas open to arts and humanities students where any subjects are acceptable for entry. Students taking Science via the vocationally related route will often focus on this area in greater depth and choose only one other subject at AS/A2 level to study alongside it.

The higher education and employment scenes are continually changing due to social, economic and political pressures. This worksheet, therefore, is not a definitive guide to your future career but is more of a prompt to get you thinking about making connections between your choice of Advanced level courses and higher education and career opportunities.

<i>Chemistry Skills</i>		⊗ Ways in which you might learn these in the subject:
<i>Numerical skills:</i>	<input type="checkbox"/> collecting and recording data <input type="checkbox"/> reading, understanding and interpreting diagrams, data and charts <input type="checkbox"/> calculating with formulae, equations, calculus and logarithms	<input type="checkbox"/> measuring and recording a sequence of changes as chemical compounds are mixed <input type="checkbox"/> using simple calculus to understand the rate of reactions in chemical experiments
<i>Problem solving:</i>	<input type="checkbox"/> investigating and clarifying problems by developing hypotheses <input type="checkbox"/> selecting suitable research techniques to test hypotheses and investigate chemical processes <input type="checkbox"/> carrying out practical investigations and experiments	<input type="checkbox"/> designing and carrying out experiments on chemical compounds and substances using scientific equipment <input type="checkbox"/> paying strict attention to detail to produce accurate results
<i>Communication skills - written and visual:</i>	<input type="checkbox"/> putting across clear, coherent and relevant information <input type="checkbox"/> presenting observations and conclusions in reports <input type="checkbox"/> presenting text, graphics and numbers using templates, spreadsheets and databases	<input type="checkbox"/> writing essays and reports on experiments, individual projects and studies <input type="checkbox"/> illustrating written materials with scientific drawings, diagrams and charts
<i>Communication skills - verbal:</i>	<input type="checkbox"/> taking part in discussions and making relevant contributions <input type="checkbox"/> listening and responding to others <input type="checkbox"/> giving presentations, using images where appropriate	<input type="checkbox"/> discussing such topics as the use of chemicals in food production, the validity of clinical trials, etc.
<i>Research skills:</i>	<input type="checkbox"/> retrieving and evaluating information from a range of sources including computer databases <input type="checkbox"/> analysing written and statistical information and drawing out from it the key pieces of information needed <input type="checkbox"/> summarising complex documents and reporting research findings and conclusions	<input type="checkbox"/> using computers to model industrial and chemical processes <input type="checkbox"/> reading scientific journals, case studies, experiment reports <input type="checkbox"/> observing, recognising and interpreting similarities and differences

⊗ Ways in which you might use these in a job:

- dealing with accounts, budgets, financial statements, etc.
- carrying out scientific research and testing products to see if they meet specifications

- investigating and developing new products such as pharmaceutical drugs, new textiles, artificial hormones
- analysing substances to determine what they are, such as drugs or forensic evidence
- finding new uses for chemicals and byproducts

- producing written and illustrated results from experiments
- writing scientific reports and technical information
- evaluating and modifying experiments for new drugs or products

- working as part of a team
- dealing with customers or patients
- giving talks or presentations

- using logic, scientific thinking and a knowledge of natural laws to analyse and solve problems in industry, agriculture, mining, medicine or space
- predicting what will happen when chemicals are mixed and warning of chemical hazards or contaminants

chemistry

⊗ other skills

In addition to the specific skills you will develop whilst studying Chemistry at Advanced level, you may also develop a number of other skills which will be extremely important, whether you go on to higher education or into employment.

>Improving own learning and performance:

- dealing with complex subjects
- checking understanding of work set and seeking clarification if unsure
- agreeing and setting targets and planning action
- following a plan to meet targets and making revisions to the plan as necessary
- checking progress with an appropriate person
- identifying any support needed and using it effectively

>Working with others:

- planning activities with others
- identifying and agreeing targets with others and checking understanding
- identifying and confirming responsibilities within the group
- agreeing working arrangements with those involved

>Working with Information Technology:

- deciding what, when and whether to use information technology
- selecting and using appropriate technological hardware and software to process data, prepare and present information
- identifying support needed and using it effectively

Chemistry

CAREER c-o-n-n-e-c-t-i-o-n-s

Although there is a wide range of careers related to Chemistry, both in the chemical industry and in other sectors of employment, there are limited opportunities to enter related careers after Advanced level studies. Possibilities include trainee Laboratory Technician posts in hospitals and Public Health Laboratories. Those opting to go on to a degree may find work as an Analytical Chemist. Students who continue their studies for at least three years after a degree (six years in total) often go into career in scientific research through gaining a doctorate. You can find out more about these careers by looking up information in your careers library under the Connexions Resources Classification(CRCI) Index codes listed here.

CRCI code	Title
TD	General information on careers related to Chemistry
T	Science Careers
TD	Biochemistry
J	Health and Medical Careers
TD	Environmental Science
AC	Environmental Health
TD	Laboratory Work
JE	Medical Laboratory Work
JJ	Pharmacy
JJ	Pharmacology
GD	Chemical Engineering
TD	Forensic Science
TA	Food Science
F	Teaching

Although it is possible to enter some of these jobs after Advanced level studies, many of these areas recruit people with higher qualifications so you may need to seriously consider going on to higher education.

6 ways to check it out

Look at the 2 Skills pages.

- ① Put a cross against those skills you already have.
- ② Tick those skills you would like to gain or develop further.

- ③ Could you see yourself studying this subject at:

	Yes	No
Advanced level	<input type="radio"/>	<input type="radio"/>
Degree level	<input type="radio"/>	<input type="radio"/>

- ④ Look at the Career Connections section which lists careers related to Chemistry. Do any of these appeal to you? Why?

- ⑤ Look at the 'Thinking of doing a degree' section which lists degree programmes that are popular with Chemistry students. Tick those that appeal to you. Pick out your top 3 and explain why.

- ⑥ So what do you think?
Are you interested in studying Chemistry further? Give 3 reasons for your answer:

1

2

3

Remember: Advanced level course grades can be converted into UCAS points which count towards admission to university so it is important to choose subjects which reflect your interests and abilities.

A = 120 points
B = 100 points
C = 80 points
D = 60 points
E = 40 points

Thinking of * doing a degree?

There are nearly 1,300 courses available at 84 universities and colleges of higher education. These include single honours degrees in Chemistry and Chemistry combined with a range of other subjects ranging from Accounting to Water Resource studies.

Degree programmes in Chemistry

Most single honours Chemistry degrees will have a foundation year where all students take the same 'core' courses and then have the opportunity to choose specialist options at the end of the foundation period. In some universities it may be possible to delay, until much later in the course, the decision as to which degree title is eventually given (e.g. Applied Chemistry, Pure Chemistry or Biochemistry). A number of courses, particularly Applied Chemistry, will offer a period of work or study experience in industry and/or abroad.

Chemistry related courses include

- Analytical Chemistry
- Applied Chemistry
- Biochemistry
- Biomolecular Chemistry
- Chemical Biology
- Chemistry with Nanotechnology
- Colour & Polymer Chemistry
- Inorganic Chemistry
- Crystallography
- Environmental Chemistry
- Forensic Chemistry
- Industrial Chemistry
- Marine Chemistry
- Medicinal Chemistry
- Organometallic Chemistry
- Applied Physiology
- Natural Sciences
- Combined Sciences
- Chemical Engineering
- Dentistry
- Dietetics
- Earth Sciences
- Environmental Health
- Environmental Sciences
- Food Sciences
- Food Technology
- Geophysics
- Metallurgy
- Medicine
- Nursing Studies
- Nutrition
- Pharmacy
- Pharmaceutical Chemistry

Details of all the degrees available in these areas, and more, can be found on the University Central Admissions System website at www.ucas.com

There are many degrees where having an Advanced level qualification in Chemistry may not be of direct relevance but will be useful, however, so you need not be restricted by this list.

Chemistry FACTFILE

Opportunities for Graduates

Recent statistics show the following trends for graduates from Chemistry degrees:

- almost 50% of those graduating entered full-time employment
- of those going into work, over 38% entered related careers in Scientific Research and Development or associated technical jobs
- most enter related jobs as Chemists with smaller numbers going into Biochemistry and other Natural Science related areas
- those not entering science and technical jobs went into a wide range of fields with significant numbers entering business and commerce, clerical secretarial and retail work
- around a third entered further full-time study or training with a large proportion of these going on to research degrees.

...jobs

These are some of the jobs that Chemistry graduates have gone into in recent years ...

- BioChemist
- Medical Sales Representative
- Environmental Analyst
- Trainee Chartered Accountant
- Management Trainee
- Scientific Researcher
- Retail Management
- Business Analyst
- Information Assistant
- Catering Assistant



need to find out more?

You might find these publications useful. Check to see if your Careers Library or local library have copies.

- > Questions and Answers - Science
published by Trotman
- > GET: Science & IT 2007
published by Hobsons
- > Careers with a Science degree
published by Lifetime Publishing
- > CRAC Degree Course Guide - Physics & Chemistry
published by Trotman
- > CRAC Degree Course Guide - Agricultural Sciences, Food Science & Technology
published by Trotman
- > Medicine Uncovered
published by Trotman
- > Getting into Medical School
published by Trotman

Free information is available from the following organisations. If writing please send a stamped addressed envelope to cover postage:

- ▷ Biochemical Society/Portland Press
3rd Floor, Eagle House,
16 Proctor Street,
London WC1V 6NX
020 7280 4100
Email: genadmin@biochemistry.org
www.biochemsoc.org.uk
- ▷ Forensic Science Society
Clarke House
18a Mount Parade
Harrogate
North Yorkshire HG1 1BX
01423 506 068
www.forensic-science-society.org.uk
- ▷ Institute of Food Science and Technology
5 Cambridge Court
210 Sheperd's Bush Road
London W6 7NJ
0207 603 6316
Email: info@ifst.org
www.ifst.org
- ▷ National Pharmaceutical Association
Mallinson House
38 - 42 St Peter's Street
St Albans
Hertfordshire AL1 3NP
01727 832161
Email: npa@npa.co.uk
www.npa.co.uk
- ▷ NHS Careers
Tel: 0845 60 60 655
www.nhscareers.nhs.uk
- ▷ Royal Pharmaceutical Society of Great Britain
1 Lambeth High Street
London SE1 7JN
020 7735 9141
Email: enquiries@rpsgb.org
www.rpsgb.org.uk
- ▷ Royal Society of Chemistry
Burlington House
Piccadilly
London W1J 0BA
020 7437 8656
www.chemsoc.org