Thinking about choosing to study Biology 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 Biology in your future career planning.

✳ BIOLOGY

Studying any Advanced level course will give you two main things, knowledge about the content of the subject (the study of the processes of life in human, plant, animal form, 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.

⊕ 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). Biology would come under Science on this route. The other subjects you choose to combine with Biology 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

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.

MIX & MATCH ⊕

Biology is normally taken with Chemistry to provide a solid foundation for entry into scientific careers. If Physics and/or Mathematics is taken a wider range of careers and courses is possible. Students taking Biology as the only science at Advanced level may still choose complementary subjects such as Geography, which may provide entry to some Environmental Studies courses, or Sociology and Psychology which could be useful for entry to Nursing and other paramedical careers such as Occupational Therapy. It can also be studied with a wide range of arts and humanities subjects to provide a contrast to the scientific approach.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.

Biology Skills		⊗Ways in which you might learn these in the subject:
Numerical skills:	☐ collecting and recording data ☐ reading, understanding and interpreting diagrams, data and charts ☐ calculating with fractions, percentages, ratios and formulas ☐ converting units of measurements using scales and tables	☐ measuring the physical dimensions of specimens ☐ calculating and measuring the effect of temperatures and light intensity on photosynthesis or enzyme activity
Problem solving:	☐ investigating and clarifying problems by developing hypotheses ☐ selecting suitable techniques to test hypotheses and investigate biological processes ☐ carrying out practical investigations and experiments	☐ carrying out experiments on biological specimens, such as small animals and plants, using scientific equipment including microscopes and dissecting tools ☐ paying strict attention to detail to produce accurate results
Communication skills - written and visual:	☐ putting across clear, coherent and relevant information ☐ presenting observations and conclusions in reports ☐ presenting text, graphics and numbers using templates, spreadsheets and databases	☐ writing essays and reports on experiments, field work and individual projects and studies ☐ illustrating written materials with microscopy drawings, diagrams and drawings of whole specimens
Communication skills - verbal:	☐ taking part in discussions and making relevant contributions ☐ listening and responding to others	☐ discussing such topics as food biotechnology, genetic engineering and fertility control
Research skills:	☐ selecting and analysing relevant information from a range of sources ☐ extracting key pieces of information ☐ summarising complex documents and reporting on research findings	☐ reading scientific journals, case studies, experiment reports ☐ analysing the inter-relationship of organisms or systems or the effect of one variable on another

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

- ☐ dealing with accounts, budgets, financial statements, etc.
- ☐ carrying out scientific research and biological surveys
- ☐ costing and evaluating different food production methods

- ☐ investigating and developing new products such as pharmaceutical drugs
- ☐ improving production processes for food, natural resources and biological products

- ☐ producing written and illustrated results from experiments
- ☐ writing scientific reports and technical information
- ☐ preparing biological specimens for study or display

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

- ☐ using a knowledge of life sciences to analyse and solve problems in industry, agriculture, forestry, medicine or space exploration
- ☐ predicting the effect on life forms of such factors as pollution and radiation

other skills

In addition to the specific skills you will develop whilst studying Biology 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

Biology

C A R E E R c-o-n-n-e-c-t-i-o-n-s

There are a number of careers where having an Advanced level qualification in Biology, and all the skills that you develop through studying it, will be very useful. The opportunities that are available are varied and include training programmes that can be entered after Advanced level, even without other sciences, such as Nursing. You can find out more about these careers by looking up information in your careers library under the Connexions Resources Classification Index (CRCI) code listed here.

CRCI code	Title
TD	General information on careers related to Biology
TD	Biochemistry
TD	Microbiology
TD	Marine Biology
TD	Biotechnology
TD	Botany
TD	Zoology
TD	Genetics
TA	Food Science
HB	Nature Conservation
HA	Careers in the Water Industry
HA	Fish Farming
HA	Agriculture/Horticulture
HB	Forestry/Aboriculture
TD	Laboratory Work
JE	Medical Science
TD	Forensic Science
TD	Environmental Science
AC	Environmental Health
F	Teaching
J	Health and Medical Careers
JH	Nursing
JA	Alternative Medicine

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	○	○
Degree level	○	○

4. Look at the Career Connections section which lists careers related to Biology. 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 Biology 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 Biology 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?

Degree level programmes normally require a minimum of 2 A2 levels, or the equivalent, plus supporting GCSE passes. There are a wide variety of courses where Advanced level Biology will be of direct relevance.

Degree programmes in Biology

A wide range of courses exist in universities and colleges of higher education. Many courses will require other sciences, particularly Chemistry, at Advanced level.

Although it is possible to take a specialist degree such as Biotechnology, many general Biological Science degrees offer the opportunity to specialise in the second or third year of study.

Biology related courses include

- Biology
- Neuroscience
- Biological Sciences
- Molecular and Cellular Biology
- Applied Human Biology
- Behavioural Biology
- Environmental Biology
- Biological Anthropology
- Environmental Sciences
- Marine Biology
- Botany
- Forensic Biology
- Biotechnology
- Plant pathology
- Wildlife Biology
- Zoology
- Zoo Management
- Aquatic Zoology
- Evolution
- Pest Science
- Parasitology
- Genetics
- Microbiology
- Population Biology
- Molecular Biology
- Biophysics
- Biochemistry
- Biological Chemistry
- Metabolic Biochemistry
- Nutritional Biochemistry
- Brewing and Distilling
- Immunology
- Veterinary Science
- Sports Science
- Life Sciences

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

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

Biology FACTFILE

Opportunities for Graduates

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

- over 57% entered employment
- just under 22% of these entered scientific and related work at both research and technician level
- graduates entered a very wide range of occupations including marketing and sales, commerce and the public sector
- over 17% entered clerical and secretarial jobs
- nearly 22% continued with some kind of further education or training, the majority of these entering higher degrees many at doctorate level.

...jobs

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

- Medical Sales Representative
- Forensic Scientist
- Researcher
- Medical Science Trainee
- Accountancy Trainee
- Civil Service
- Advertising Executive
- Data Management
- Quality Control Technician
- Healthcare 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

> CRAC Degree Course Guide - Biological Science
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.biochemistry.org

▷ Forensic Science Society
Clarke House
18a Mount Parade
Harrogate
North Yorkshire HG1 1BX
01423 506 068
www.forensic-science-society.org

▷ Institute of Biology
9 Red Lion Court
London EC4A 3EF
020 7936 5900
www.iob.org

▷ Institute of Biomedical Science
12 Coldbath Square
London EC1R 5HL
020 7713 0214
Email: mail@ibms.org
www.ibms.org

▷ Institute of Food Science and Technology
5 Cambridge Court
210 Shepherds Bush Road
London W6 7NJ
020 7603 6316
Email: info@ifst.org
www.ifst.org

▷ Institute of Science Technology
Kingfisher House
90 Rockingham Street
Sheffield SE1 4EB
0114 276 3197
Email: office@istonline.org.uk
www.istonline.org.uk

▷ Natural Environment Research Council
Polaris House
North Star Avenue
Swindon SN2 1EU
01793 411500
www.nerc.ac.uk

▷ NHS Careers
0845 60 60 655
www.nhscareers.nhs.uk

▷ Society for General Microbiology
Marlborough House
Basingstoke Road
Spencers Wood
Reading
Berkshire RG7 1AG
0118 988 1800
Email: careers@sgm.ac.uk
www.biocareers.org.uk