

# Biology

## GCE Student Guide

Studying AS or A level Biology will allow you to delve much deeper into the subject than when studying at GCSE level. Topics which may be familiar to you from GCSE are studied in much more detail and are updated with contemporary developments in the subject.

In addition, new topics such as biochemistry and molecular biology will help to give you a deeper understanding of the subject as a whole and make links between different areas of biology.



### Why study Biology?

Biology is the study of life and, as complex living organisms ourselves, many of us are naturally drawn to find out more about how we work. Through exploring biology at this level, you can find out more about how organisms are built and how they function, as well as learning how they interact with each other and with their surroundings.

Not only will you discover how powerful electron microscopes have allowed us to explore plant and animal cells in detail, but you will learn about the molecules which make up these cells and see that, even at this level of organisation, structure is inextricably linked to function in biology.

In addition to this examination of the smallest units in biology, you will also study the 'big picture' by learning about communities and ecosystems, as well as the universal role of DNA in maintaining the variety of life on the planet.

We have included a number of sections on contemporary developments in biology in order to make this a truly 21st century course. For example, you will learn about how a disrupted cell cycle contributes to the development of cancer, as well as finding out how some anti-cancer medications work to bring the disease under control.

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### What will I study?

Unit	Areas of Study
<b>AS 1:</b> Molecules and Cells	In this unit you will start by studying the building blocks of life; molecules and cells, since these are the foundations of a functioning organism. You will also be introduced to the idea of structure related to function.
<b>AS 2:</b> Organisms and Biodiversity	<p>This unit covers the physiology of plants and animals. You will study examples of transport and exchange in both groups, as well as examining the principles which govern these mechanisms.</p> <p>This leads on to the concept of adaptation, in the context of habitat studies. You will also learn about principles of classification and biodiversity.</p>
<b>AS 3:</b> Practical Skills in AS Biology	Throughout your AS studies, you will carry out and report on practical activities which are designed to help you understand concepts and processes, or illustrate biological phenomena.
<b>A2 1:</b> Physiology, Co-ordination and Control, and Ecosystems	<p>In this unit, you will explore human physiology in more detail, learning about co-ordination and control, as well as the defences of the body against disease.</p> <p>You will build upon the ecology studied at AS level by investigating populations and communities, as well as nutrient cycles and energy flow.</p>
<b>A2 2:</b> Biochemistry, Genetics and Evolutionary Trends	Genetics is studied from a range of perspectives in this unit, including inheritance patterns, population genetics and evolution. This is linked to the study of molecular genetics, exploring how DNA controls the activities of the cell. Biochemical pathways including respiration and photosynthesis are studied in some detail in this unit.
<b>A2 3:</b> Practical Skills in Biology	As with AS 3, throughout your A level studies, you will carry out and report on practical activities which are designed to help you understand concepts and processes and illustrate biological phenomena.

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### How will I be assessed?

Unit	Assessment Description	Weighting
<b>AS 1:</b> Molecules and Cells	There is a written examination, which lasts 1 hour 30 minutes. You will be asked to answer between six and eight compulsory structured questions, as well as write an essay on a topic from this unit.	37.5% of AS 15% of A level
<b>AS 2:</b> Organisms and Biodiversity	There is a written examination, which lasts 1 hour 30 minutes. You will be asked to answer between six and eight compulsory structured questions, as well as write an essay on a topic from this unit.	37.5% of AS 15% of A level
<b>AS 3:</b> Practical Skills in AS Biology	Your teacher will carry out part of the assessment, by marking your work on practical tasks carried out over the course of the year. Your marks for seven practicals will be submitted for the internal assessment component of this unit.  In addition, there is a written examination which lasts 1 hour and consists of between seven and ten structured questions.	25% of AS 10% of A level
<b>A2 1:</b> Physiology, Co-ordination and Control and Ecosystems	There is a written examination, which lasts 2 hours 15 minutes. You will be asked to answer between six and nine compulsory structured questions, as well as write an essay on a topic from this unit.	24% of A level
<b>A2 2:</b> Biochemistry, Genetics and Evolutionary Trends	There is a written examination, which lasts 2 hours 15 minutes. You will be asked to answer between six and nine compulsory structured questions, as well as write an essay on a topic from this unit.	24% of A level
<b>A2 3:</b> Practical Skills in Biology	Your teacher will carry out part of the assessment, by marking your work on practical tasks carried out over the course of the year. Your marks for five practicals will be submitted for the internal assessment component of this unit.  In addition, there is a written examination which lasts 1 hour 15 minutes and consists of between eight and ten structured questions.	12% of A level

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### What can I do with a qualification in Biology?

With this qualification, you could either go on to further study in biology or a wide range of other disciplines, or you could enter the world of work, where many of the skills you have developed will be highly sought after.

Knowledge of biological processes has implications for a wide range of fundamentally important areas, including health, food production, conservation and, increasingly, technology. Furthermore, a qualification in biology may be a recommendation or a prerequisite for entering further study in the fields of medicine, nursing, dentistry, veterinary science, speech and language therapy, pharmacology, physiology, biomedical science, forensic science and agriculture. Through following this specification, you will develop skills that are valued in Further and Higher Education, including an ability to understand complex processes, analysis, evaluation of practices, problem-solving and research, as well as practical skills such as using a microscope, handling apparatus and fieldwork.

Many of these skills are also highly valued in the workplace, where the ability to take on board new concepts quickly and to suggest improvements to established practices can be very useful. The ability to understand data presented in a variety of forms, including text, tables and graphs, is also an important transferable skill which is developed through the study of biology at this level.

To find out more, visit the **CCEA Website** for the latest support and updates for this subject.

