

# Biology



## What is Biology?

Biology is the science of life. Its name is derived from the Greek words "bios" (life) and "logos" (study). Biologists study the structure, function, growth, origin, evolution and distribution of living organisms.

## What will I learn?

All the branches of biology can be unified within a framework of five basic understandings about living things. Studying the details of these five ideas provides the endless fascination of biological research:

- **Cell Theory:** There are three parts to cell theory — the cell is the basic unit of life, all living things are composed of cells, and all cells arise from pre-existing cells.
- **Energy:** All living things require energy, and energy flows between organisms and between organisms and the environment.
- **Heredity:** All living things have DNA and genetic information codes the structure and function of all cells.
- **Equilibrium:** All living things must maintain homeostasis, a state of balanced equilibrium between the organism and its environment.
- **Evolution:** This is the overall unifying concept of biology. Evolution is the change over time that is the engine of biological diversity.

The syllabus is divided into eight topics:

1. **Lifestyle, Health and Risk.**
2. **Genes and Health.**
3. **Voice of the Genome.**
4. **Biodiversity and Natural Resources.**
5. **On the Wild Side.**
6. **Immunity, Infection and Forensics.**
7. **Run For Your Life.**
8. **Grey Matter**

You will develop practical skills by planning experiments, collecting data, analysing experimental results and making conclusions. You will also learn how scientific models are developed, the applications and implications of science, the benefits and risks that science brings and the ways in which society uses science to make decisions.

## Assessment in Biology

The A level course is examined via three exams at the end of two years. Each exam is worth a third of the total marks. Practical work is assessed equally through all three papers and is worth 15% of the total marks. Mathematical skills account for 10% of all the marks and will be set at level 2 (GCSE higher tier grade 6 and above). All three papers are 2 hours long and worth 100 marks.

The papers are as follows:

**Paper 1:** Topics 1-4, 5 and 6.

**Paper 2:** Topics 1-4, 7 and 8.

**Paper 3:** All topics. A pre-released scientific article will underpin one exam question. This paper will include synoptic questions that draw on two or more different topics. Practical skills are assessed through core practical investigations. There is no coursework.

## Entry Requirements

Combined Science students:  
A grade 7 in Combined Science

Separate Sciences:  
Grade 7 in GCSE single science Biology (you also need to have studied Chemistry and Physics to GCSE level).

Maths and English Language GCSE at grade 6.

Exam board: Edexcel

Specification A (Salters-Nuffield)

Link to course specification [here](#)

Link to example exam papers [here](#)



## Careers in Biology

Careers specific to biology can be in the following areas:

- **Biochemistry:** the study of the material substances that make up living things
- **Botany:** the study of plants, including agriculture
- **Cellular biology:** the study of the basic cellular units of living things
- **Ecology:** the study of how organisms interact with their environment
- **Evolutionary biology:** the study of the origins and changes in the diversity of life over time
- **Genetics:** the study of heredity
- **Molecular biology:** the study of biological molecules
- **Physiology:** the study of the functions of organisms and their parts
- **Zoology:** the study of animals, including animal behaviour

Careers where Biology A level is really useful:

- Medicine
- Dentistry
- Veterinary Science
- Marine Biologist
- Pharmacologist
- Optician
- Nature conservation officer

## Complementary Subjects to Biology

- Chemistry
- Maths
- Psychology
- Physics
- Philosophy

## Enrichment in Biology

- Biology Field trip to gain practical experience in ecological field study techniques
- Zoo visit to have lectures on captive breeding programs, the role of a modern zoo and an animal behaviour workshop
- A large library of Biological Science articles
- Large library of Biology related videos

*I just like trying to understand how the human body works*

**Why some students choose Biology!**

*I'm interested in new developments in Biology, such as genetic engineering, and how they can make peoples lives better*

*What is life and where we have come from are big questions that fascinate me*