

This syllabus builds on concepts and skills that have been developed in the GCSE Science specifications. It presents Biology as exciting, relevant and challenging.

- Essential principles are presented in contexts designed to stimulate the enthusiasm and interest of students.
- Emphasis is placed on the way scientists work and the contributions of science to modern society.
- Students will understand concepts and principles whilst developing key advanced level scientific skills.
- Students' practical skills will be developed through AQA set investigations and tasks chosen by the teacher. Their ability will be assessed via AQA examination papers.
- Students will be taught in mixed sets with a variety of teaching styles. They will learn key study skills, which will allow them to take much more responsibility for their own learning and progress.

Students who begin this course will be expected to have a keen interest in the study of Biology, and to be well-motivated. You should ideally have achieved at least a grade B in Biology or BB in Double Award Science.

Content studied in Year 12:

Topic 1: Biological molecules

- 1.1 Monomers and polymers
- 1.2 Carbohydrates
- 1.3 Lipids
- 1.4 Proteins
- 1.5 Nucleic acids are important information-carrying molecules
- 1.6 ATP
- 1.7 Water
- 1.8 Inorganic ions

Topic 2: Cells

- 2.1 Cell structure
- 2.2 Cells arise from other cells
- 2.3 Transport across cell membranes
- 2.4 Cell recognition and the immune system

Topic 3: Organisms exchange substances with their environment

- 3.1 Surface area to volume ratio
- 3.2 Gas exchange
- 3.3 Digestion and absorption
- 3.4 Mass transport

Topic 4: Genetic information, variation and relationships between organisms

- 4.1 DNA, genes and chromosomes
- 4.2 DNA and protein synthesis
- 4.3 Genetic diversity can arise as a result of mutation or during meiosis
- 4.4 Genetic diversity and adaption
- 4.5 Species and taxonomy
- 4.6 Biodiversity within a community
- 4.7 Investigating diversity

All students of Biology going onto Year 13 will be required to attend a residential Field Trip as an essential component of the course. This will provide vital practice for the elements of the Year 13 course involving ecological techniques and the statistical analysis of data. At the same time it will help to develop their understanding of the subject and, hopefully, deepen their interest in it.

Content studied in Year 13:

Topic 5: Energy transfers in a between organisms

- 5.1 Photosynthesis
- 5.2 Respiration
- 5.3 Energy and ecosystems
- 5.4 Nutrient cycles

Topic 6: Organisms respond to changes in their internal and external environments

- 6.1 Stimuli, both internal and external, are detected and lead to a response
- 6.2 Nervous coordination
- 6.3 Skeletal muscles are stimulated to contract by nerves and act as effectors
- 6.4 Homeostasis is the maintenance of a stable internal environment

Topic 7: Genetics, populations, evolution and ecosystems

- 7.1 Inheritance
- 7.2 Populations
- 7.3 Evolution may lead to speciation
- 7.4 Populations in ecosystems

Topic 8: The control of gene expression

- 8.1 Alteration of the sequence of bases in DNA can alter the structure of proteins
- 8.2 Gene expression is controlled by a number of features
- 8.3 Using genome projects
- 8.4 Gene technologies allow the study and alteration of gene function allowing a better understanding of organism function and the design of new industrial and medical processes

A-level Biology Assessment:

AS Biology Exams:

Topics 1-4, including relevant practical skills, are assessed in two 1 hour 30 minute examination papers taken at the end of year 12. Paper 1 is out of 75 marks (65 marks for short answer questions and 10 marks for a comprehension question) which will equate to 50% of the AS qualification. Paper 2 is also out of 75 marks (65 marks for short answer questions and 10 marks for an extended response question) this paper will make up the other 50% of the AS assessment.

A-level Biology Exams:

Topics 1-8, including relevant practical skills, are assessed in three 2 hour examination papers taken at the end of year 13. Paper 1 is out of 91 marks (76 marks for a mixture of short and long answer questions and 15 marks for an extended response question) which will equate to 35% of the A-level qualification. Paper 2 is also out of 91 marks (76 marks for a mixture of short and long answer questions and 15 marks for a comprehension question) this paper will make up 35% of the A-level assessment. The final 30% of the A-level qualification is covered by Paper 3 which is out of 78 marks (38 marks for structured questions including practical techniques, 15 marks for critical analysis of experimental data and 25 marks for one essay from a choice of two).

Higher education and careers

An A level in Biology is an essential requirement for some courses and a useful asset for many others. You need to check university prospectuses and ask for careers advice if you have a particular course or career in mind. In the past, students of Biology have gone on to study many different courses including:

Biological Science
Environmental Studies
Genetic Engineering
Agriculture
Veterinary Science
Pharmacy
Teaching
Radiography

Geography
Biotechnology
Horticulture
Dentistry
Optometry
Physiotherapy
Forensic Science
Dietetics

Biochemistry
Farm Management
Medicine
Forestry
Sports Science
Osteopathy
Nursing
Pharmacology

Subjects that go well with Biology

If you are keen to study Biology then some of the subjects that go particularly well with it are Chemistry, Geography, Mathematics, Philosophy, Psychology, Sports Science and Home Economics (Food), but it must be emphasized that Biology is a 'stand-alone' subject; you do not have to do any other science beyond GCSE to enjoy it or to do well. As with any other A-level subject, **enthusiasm and hard work are the keys to success.**