

# Biology

# Pathway 1

## Course description:

In Year 12 you will follow a course of study which among other topics will include pathogens, lifestyles, biological molecules, cells, diseases, immunology, genetics and ecology. In Year 13 you will get the opportunity to learn about populations, biochemistry of photosynthesis and respiration, nutrient cycles, homeostasis, animal reproduction and principles of genetic engineering. Some of the topics provide excellent opportunities for off-site visits and external experts coming in to share their expertise with you. You will also complete a practical endorsement qualification throughout the course which will allow you to investigate a range of biological concepts using a variety of scientific equipment.

## Qualifications required:

- In line with the entry requirements for a Pathway 1 subject.
- Grade 6 in GCSE Biology or grade 7-6 in GCSE Combined Science.
- Grade 5 in GCSE English Language or Literature and Maths.

## Aims of the course:

Through actively taking part in practical and theory activities embedded in the subject, you will gain deeper understanding of how scientists work and how science contributes to modern society. The subject places greater emphasis on exploring ideas and scientific investigations to find answers to key questions in science. You will also develop skills alongside your understanding of concepts and principles.

## Future prospects:

A Level Biology provides opportunities for career progression to University and college courses in biological sciences, forensic science, education, research, agriculture, medicine and pharmacy, among others.

## Student feedback:

“The A grade I got in A Level Biology has helped to enrol for a university place in Medicine, it makes me feel great.”

## Subject Teachers:

Miss V Cook (Head of Biology), Mr N Salisbury and Miss T Ali

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## Features of the course:

- Structured lessons
- Practical laboratory activities and field work
- ICT based research and presentations
- Investigative skills assessments

### Year 12

#### Sections 1 to 4

The first section looks at a range of biological molecules including carbohydrates, lipids, proteins and nucleic acids. You will look into their structures and functions and how they provide indirect evidence for evolution.

The second section provides greater detail into different types of cells and their features. You will look into how these cells arise, for example by binary fission, and how cells interact with one another.

The third section outlines how substances are exchanged between the internal and external environment at exchange surfaces. You will look into mass transport systems in larger organisms and the role of diffusion in carrying substances around the body.

The fourth section looks into genetic information, variation and relationships between organisms. You will look into biological and genetic diversity, variation and the biodiversity of communities.

### Year 13

#### Sections 5 to 8

The fifth section provides greater detail about how energy is transferred between organisms. You will look into photosynthesis and respiration and how life depends on a continuous transfer of energy.

The sixth section outlines how organisms respond to changes in their internal and external environment. You will look into the nervous system as well as the plant and animal hormones.

The seventh section looks at genetics, populations, evolution and ecosystems. You will look into the theory of evolution and genetic variation caused by genetic drift and natural selection.

The eighth section looks into control of gene expression. You will look into how cells are able to control their metabolic activities and how the phenotype of an organism can be controlled. You will also study genetic advances such as epigenetics and many medical and technological applications.

## Methods of Assessment:

There will be three summer examinations at the end of the A2 course. You will also complete a practical endorsement qualification throughout the two-year course.