



Year 13 Biology



What have students at St. Crispin's been taught to understand and be able to do?

Core Knowledge

Module 5 – Communication, homeostasis and energy

It is important that organisms, both plants and animals are able to respond to stimuli. This is achieved by communication within the body, which may be chemical and/or electrical. Both systems are covered in detail in this module. Communication is also fundamental to homeostasis with control of temperature, blood sugar and blood water potential being studied as examples.

In this module, the biochemical pathways of photosynthesis and respiration are considered, with an emphasis on the formation and use of ATP as the source of energy for biochemical processes and synthesis of biological molecules.

Learners are expected to apply knowledge, understanding and other skills developed in this module to new situations and/or to solve related problems.

5.1.1 Communication and homeostasis

5.1.2 Excretion as an example of homeostatic control

5.1.3 Neuronal communication

5.1.4 Hormonal communication

5.1.5 Plant and animal responses

5.2.1 Photosynthesis

5.2.2 Respiration.

Module 6 – Genetics, evolution and ecosystems

This module covers the role of genes in regulating and controlling cell function and development. Heredity and the mechanisms of evolution and speciation are also covered.

Core Skills

Module 1 – Development of practical skills in Biology

The development of practical skills is a fundamental and integral aspect of the study of any scientific subject. These skills not only enhance learners' understanding of the subject but also serve as a suitable preparation for the demands of studying Biology at a higher level.

1.1 Practical skills assessed in a written examination

⇒ These skills include experimental design, analysis of data and evaluation of practical outcomes

1.2 Practical skills assessed in the practical endorsement

⇒ These skills include the manipulation and use of a range of scientific equipment, from use of microscopes to quadrats and working with biological molecules, enzymes and live or dead organisms. Particular practicals in this year will involve genetic manipulation of E.coli, using gel electrophoresis and breeding fruit flies to study genetics. In Physiology, students have the opportunity to perform a dissection of a rat.



Year 13 Biology continued



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Some of the practical techniques used to manipulate DNA such as sequencing and amplification are considered and their therapeutic medical use. The use of microorganisms in biotechnology is also covered. Both of these have associated ethical considerations and it is important that learners develop a balanced understanding of such issues.

Learners gain an appreciation of the role of microorganisms in recycling materials within the environment and maintaining balance within ecosystems. The need to conserve environmental resources in a sustainable fashion is considered, whilst appreciating the potential conflict arising from the needs of an increasing human population. Learners also consider the impacts of human activities on the natural environment and biodiversity.

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6.1.1 Cellular control

6.1.2 Patterns of inheritance

6.1.3 Manipulating genomes

6.2.1 Cloning and biotechnology

6.3.1 Ecosystems

6.3.2 Populations and sustainability.

How has learning been assessed?

Students will complete a formative multiple choice assessment and written response task every half term. This develops writing ability and helps to identify gaps in knowledge.

Students will also complete a summative written mock exam twice a year.

Students will take their terminal exam consisting of 3 papers in the summer of Year 13.

What is coming up in the following year?

Many of our students will take science based courses at University with many taking Environmental science, Biochemistry, Neuroscience or traditional medicine and veterinary