IB Biology HL and SL

The IB Biology course provides an excellent grounding of knowledge, techniques and experiences for the committed life scientist hoping to pursue a related degree or career. It dovetails effectively with a range of other subjects, providing insight into applications of science, the workings of the scientific community and core global and ethical issues. These ideas are founded on a detailed theoretical knowledge developed during the course. The course will provide ample opportunities for students to develop their potential in the Theory of Knowledge and Extended Essay parts of the IB Diploma. Emphasis is placed on thinking skills, problem solving and consideration of some of the key skills in science - analysis, evaluation and synthesis of knowledge. Biology is a practical subject and its experiences are developed through use of a range of apparatus and ICT equipment which complements hands-on practical work. Investigative work forms a spine of the biologist's studies and its emphasis is rightly encouraged in the course.

Content

All students follow the core components of the course, along with one Option topic. Those studying HL will look into the option and some other aspects of the core material in greater detail. Within the course we take our students on a residential field course in order to improve their practical ecology skills.

The core comprises the following topics (*HL only):

- Cell biology
- Molecular biology
- Genetics
- Ecology
- Evolution and biodiversity
- Human physiology
- Nucleic acids
- Metabolism, cell respiration and photosynthesis*
- Plant biology*
- Genetics and evolution*
- Animal physiology*

The options available are:

- Animal physiology
- Biotechnology and bioinformatics
- Ecology and conservation
- Human physiology

Assessment

The course is examined through three written papers contributing a total of 80% of the final grade. The papers cover a range of multiple-choice, structured and extended response questions. The remaining 20% of the marks come from a 10 hour investigative practical project that is internally assessed.

Three written papers

10 hour investigative practical project

A Level Biology

Exam Board: OCR

This is a dynamic course that allows pupils to delve further into the wonders of the living world. It beautifully extends the facts acquired at GCSE to give our candidates insight into the workings of systems in living organisms, and how all of life is interconnected. With a talented and dedicated department of teachers, who have specific skills such as ecology and conservation, palaeontology, and biochemistry, not to mention experienced OCR examiners, our pupils are ably supported to access the course material. The opportunity for practical is vast as the course lends itself to learning through experimentation, and time is also spent carrying out field work. The course is split into 6 teaching modules:

Module 1 – Development of practical skills in biology

Module 2 – Foundations in biology

- Cell structure
- Biological molecules
- Enzymes
- Membranes
- Cell division, diversity & organisation

Module 3 – Exchange & transport

- Exchange surfaces
- Transport in animals & plants

Module 4 – Biodiversity, evolution & disease

- Communicable diseases, disease prevention and the immune system
- Biodiversity
- Classification & evolution

Module 5 – Communication, homeostasis and energy

- Homeostasis
- Liver & kidneys
- Neuronal communication
- Hormonal communication
- Plant and animal responses
- Photosynthesis
- Respiration

Module 6 – Genetics, evolution & ecosystems

- Cellular control
- Patterns of inheritance
- Manipulating genomes
- Cloning and biotechnology
- Ecosystems
- Populations and sustainability.

Assessment

It is examined in 3 written papers with the first two taking specific areas of the course, and the final paper being synoptic. All three papers are sat at the end of the upper sixth year for those taking the full A level. However, pupils may sit the AS examinations at the end of the first year.

The course includes a 'Practical Endorsement' for which the pupils are expected to keep laboratory notes in which they will demonstrate key practical skills.

Candidates are expected to complete mathematical tasks equivalent to Level 2 (GCSE and above) as part of their skills. These questions are incorporated into 'How Science Works' questions that aims to draw out a candidate's understanding of the scientific process.