

## **BIOLOGY (Advanced Higher)**

*This course will be offered at PA in col C and at Perth Grammar School in Col D*

### **Course Description**

This course is suitable for students who already have Higher biology at grade A or B. This course provides the ideal opportunity for pupils to work using their own initiative. It is therefore ideal for those intending to go to university, whether the intention is to study Biology or not. It is excellent for students who intend to progress onto biology, dentistry, medicine and vet medicine at university. Each week there will be two or three homework sets. In addition to this, students will be expected to spend time learning the theory covered in class.

### **The work of the course**

The course will involve the study of 3 Units

#### **Biology: Cells and Proteins**

This unit develops an understanding of the genome and of proteomics. The study of protein is primarily a laboratory-based activity, so the unit includes important laboratory techniques for biologists. This skills-based sequence covers health and safety considerations, through the use of liquids and solutions, to a selection of relevant separation and antibody techniques. In addition, much work on cell biology is based on the use of cell lines, so includes techniques related to cell culture and microscopy.

#### **Biology: Organisms and Evolution**

This unit builds on understanding of selection in the context of evolution and immune response from higher biology. Learners will develop knowledge and understanding of evolution; variation and sexual reproduction; sex and behaviour and parasitism. It covers the role of sexual reproduction and parasitism in the evolution of organisms. Biological variation is a central concept in this unit and is best observed in the natural environment. This unit covers suitable techniques for ecological field study. Methods of sampling and the classification and identification of organisms are introduced. Evolution is considered from the impact of drift and selection on variation. The study of sexual behaviour provides opportunities to use the techniques of ethology. There are many opportunities to explore the systems approach required for the understanding of parasite biology. In addition, there are many opportunities to explore wider ethical issues.

#### **Investigative Biology**

This unit builds on understanding of the scientific method from Higher biology. Learners will develop knowledge and understanding of the principles and practice of investigative biology and its communication. The unit covers scientific principles and processes, experimentation and critical evaluation of biological research. Learners will do this through the key aspects of the scientific method, literature and communication and ethics; pilot studies, variables, experimental design, controls, sampling and ensuring reliability; evaluating background information, experimental design, data analysis and conclusions. The collection of experimental data will provide an opportunity to develop planning and organising skills.

**Internal Assessment**

Learners are required to pass an assessment at the end of each unit. The assessments are internally marked and will be resulted with either a pass or a fail.

**External Assessment**

There is an external exam which is worth 100 marks. There is also a project which is worth 30 marks, making a total of 130 marks. To gain the award of the Course, the learner must pass all of the units as well as the Course assessment.