

## Biology Curriculum Information

### Year 7

Body systems are studied using the school rabbit as a typical mammal. Links are made to their own body and development and why we are classified as mammals. Taxonomy is explored further prior to an Autumn Term visit to Twycross Zoo which focuses on conservation and the role of a zoo in protecting endangered animals. The girls grow rapid cycling Brassica plants in the Spring Term as an ideal way of tracking development from seed to flowering maturity. This culminates in detailing flower structure and the eventual formation of yet more fruits and seeds. A Summer Term visit to the Attenborough Arboretum provides an ideal opportunity to work in the field and to observe many different plants at various stages of development and some of the animals dependent on them.

### Year 8

The year begins with using the microscope to study cell structure and the development of tissues and organs in multicellular organisms. Whilst learning about the mammalian respiratory system, the girls appreciate the chance to observe and handle real life organs. Microorganisms become the focus later in the year, cultures are grown and some emphasis is placed on their important roles in the biosphere. The immune response to pathogenic invasion is considered and the need for food preservation. As the year draws to an end, we turn our attention to bird development; eggs are incubated and the development of the chicks observed over the few remaining weeks. A visit to the Osprey Project at Rutland Water highlights a true success story in conservation and the girls can also observe some of the ways in which the reserve is managed to maintain biodiversity.

### Year 9

In Year 9 the girls study in greater depth some of the major topics that form part of their eventual GCSE. This includes considering what constitutes a balanced diet and the basic biochemistry which underpins the study of carbohydrates, lipids and proteins. Digestion is explored particularly from a practical viewpoint and the absorption of molecules into the blood stream. Further detail regarding the circulatory system is explored and there is the opportunity to dissect a heart. Plants then take centre stage and we investigate aspects of photosynthesis including their pivotal role in carbon cycling. Some of the devastating effects of humans on the environment are obviously discussed at this point.



## **Year 10 (GCSE)**

The current Year 10 has recently embarked on the “new” specification at GCSE. The course structure has not changed, but the subject content has been rearranged somewhat and there are some new sections albeit small ones. The only significant difference is the approach to the practical coursework, but this still accounts for 25% of the final GCSE grade. Full details can be obtained from the examination board website: [www.aqa.org.uk](http://www.aqa.org.uk) GCSE BIOLOGY 4401

## **Years 11 (GCSE)**

Towards the end of Year 9 girls will have chosen to study either the three separate sciences or to work towards a double certificate in Science and Additional Science over the two years of their GCSE course. They will all still receive lessons in all three sciences. There are three units of study in GCSE level Biology. Girls taking separate award Biology do all three and the double certificate girls study units one and two. The three units are summarised below and further details are available on the examination board website:

[www.aqa.org.uk](http://www.aqa.org.uk)

GCSE Science A 4461

Unit 1: B1a Human Biology

- Co-ordination and control
- Healthy Eating
- Drug abuse
- Controlling infectious disease

B1b Evolution and environment

- Adaptation for survival
- Variation
- Evolution
- How people affect the planet

Girls are entered for the multiple choice examination in B1a in the June of Year 10 and 1b in the November of Year 11. Some preparatory work in Unit two would be covered during Year 10.

GCSE Additional Science 4463

Unit 2

- Cells
- How plants produce food
- Energy flows
- Enzymes
- Homeostasis
- Inheritance

GCSE Biology 4411

Only the girls studying all three separate sciences are required to cover this unit.



## Unit 3

- Exchange of materials
- Transporting substances around the body
- Microbiology

## **Years 12 & 13 (AS & A2)**

A level Biology involves the study of six different units, three at AS level for girls entering Year 12 and a further three if they choose to continue at A2 in Year 13. Each unit is subdivided into modules. The specification is divided into major biological topics each containing different key concepts of Biology. The units are summarised below and further details, if required, are available on the examination board's website – [www.ocr.org.uk](http://www.ocr.org.uk)

### AS GCE H021

#### Unit F211: Cells, Exchange and Transport

- Module 1: Cells
- Module 2: Exchange & Transport

#### Unit F212: Molecules, Biodiversity, Food and Health

- Module 1: Biological molecules
- Module 2: Food & Health
- Module 3: Biodiversity & Evolution

#### Unit F213: Practical Skills in Biology 1

The last unit is internally assessed in the normal course of teaching the theoretical components of the course. Practical skills are developed as investigations are carried out or microscopes are used to observe biological material.

A2 GCE H421 for girls studying Biology for the two years.

#### Unit F215: Communication, Homeostasis and Energy

- Module 1: Communication & Homeostasis
- Module 2: Excretion
- Module 3: Photosynthesis
- Module 4: Respiration

#### Unit F215: Control, Genomes and Environment

- Module 1: Cellular Control & Variation
- Module 2: Biotechnology & Gene Technologies
- Module 3: Ecosystems & Sustainability
- Module 4: Responding to the Environment

#### Unit F216: Practical skills in Biology 2

As at AS, practical tasks are set as directed by the OCR board and internally assessed.

