

## BIOLOGY

### AS Level

#### Course Outline

During the course you will develop an enthusiasm for Biology, including developing an interest in further study and careers in Biology. You will start to appreciate how society makes decisions about scientific issues and how the sciences contribute to the success of the economy and society. You will develop and demonstrate a deeper appreciation of the practical skills, knowledge and understanding of how science works. You will also develop essential knowledge of different areas of Biology and how they relate to each other. You will become aware of advances in technology relevant to Biology.

#### Entry Requirements

Biology is a living, dynamic and exciting science – the science of life itself. It is a young and expanding subject. Few people who study Biology can ever look at the world through the same eyes again. The study of Biology provides a lifelong interest in and enjoyment of the living world.

You should study Biology if you enjoy the subject and feel you want to study it further. You may need the subject as part of your future plans for example if you are contemplating a scientific career. You may also be good at the subject and it may form a reasonable combination with the other subjects that you are studying. You will need to have studied Science at Double award and have a good double pass, or you will need the separate Biology GCSE at a good pass grade.

#### What Will I Study?

Learners should be prepared to apply the knowledge, understanding and skills in a range of theoretical, practical, industrial and environmental contexts.

Practical work is an intrinsic part of this specification. It is vitally important in developing a conceptual understanding of many topics and it enhances the experience and enjoyment of biology. The practical skills developed are also fundamentally important to learners going on to further study in biology and related subjects, and are transferable to many careers.

There is specified practical work that must be undertaken by learners in order that they are suitably prepared for the written examinations. The completion of this practical work will develop practical skills.

**UNIT 1: BASIC BIOCHEMISTRY AND CELL ORGANISATION** 20% of A level qualification

Teacher in charge of Biology: Dr S Broadley  
Teachers: Dr S Broadley, Dr M Matthews,  
Mrs G Burgoyne-Hyden  
Examination Board: WJEC

This unit includes the following topics:

- Chemical elements are joined together to form biological compounds
- Cell structure and organisation
- Cell membranes and transport
- Biological reactions are regulated by enzymes
- Nucleic acids and their function
- Genetic information is passed on to daughter cells

**UNIT 2: BIODIVERSITY AND PHYSIOLOGY OF BODY SYSTEMS** 20 % of A level qualification

This unit includes the following topics:

- All organisms are linked through their evolutionary history
- Adaptations for gas exchange
- Adaptations for transport
- Adaptations for nutrition

#### How Will I Be Assessed?

You will be taught through a variety of teaching methods ranging from group presentation and discussions to more traditional teacher led lessons. Practical work will also feature heavily in the course. A dedicated course text is provided together with the numerous text resources of the Biology department.

#### SUMMARY OF ASSESSMENT

This specification is divided into a total of 5 units, 2 AS units and 3 A2 units. Weightings noted below are expressed in terms of the full A level qualification.

**AS UNIT 1 (2 UNITS): BASIC BIOCHEMISTRY AND CELL ORGANISATION**

Written examination: 1 hour 30 minutes  
20% of qualification

A range of short and longer structured questions, some in a practical context and one essay.

**AS UNIT 2: BIODIVERSITY AND PHYSIOLOGY OF BODY SYSTEMS**

Written examination: 1 hour 30 minutes  
20% of qualification

A range of short and longer structured questions, some in a practical context and one essay.

#### Career Opportunities And Progression

You will have developed knowledge and skills that will be beneficial in any scientific career, especially those working with people, or with animals or plants. You will also gain numeracy and communication skills as well as valuable practical skills. Such skills will equip you for many technical careers such as laboratory based work or the childcare and healthcare professions to name but a few. Successful completion will also allow you to proceed to the A2 course in Year 13.

Teacher in charge of Biology: Dr S Broadley  
Teachers: Dr S Broadley, Dr M Matthews,  
Mrs G Burgoyne-Hyden  
Examination Board: WJEC

## BIOLOGY

### A2 Level

#### Course Outline

The A2 units continue to build on the knowledge and skills gained during the AS course. The units further develop the knowledge of ideas in biochemistry, whilst introducing new concepts of genetics and neurophysiology. The study of animal and plant physiology is continued. Analytical skills will be enhanced with an introduction of statistical analysis of data. The marks gained at AS will constitute 40% of the total A2 marks.

#### Entry Requirements

Grade D or above AS Biology

#### What Will I Study?

A2 UNIT 3: ENERGY, HOMEOSTASIS AND THE ENVIRONMENT

25 % of qualification

- Importance of ATP
- Photosynthesis uses light energy to synthesise organic molecules
- Respiration releases chemical energy in biological processes
- Microbiology
- Population size and ecosystems
- Human impact on the environment
- Homeostasis and the kidney
- The nervous system

A2 UNIT 4: VARIATION, INHERITANCE AND OPTIONS

25 % of qualification

This unit includes the following topics:

- Sexual reproduction in humans
- Sexual reproduction in plants
- Inheritance
- Variation and evolution
- Application of reproduction and genetics

The option the department has selected:

- Human Musculoskeletal Anatomy

#### How Will I Be Assessed?

A LEVEL (AS UNITS plus a further 3 units)

A2 UNIT 3: ENERGY, HOMEOSTASIS AND THE ENVIRONMENT

Written examination: 2 hours

25% of qualification

A range of short and longer structured questions, some in a practical context and one essay.

A2 UNIT 4: VARIATION, INHERITANCE AND OPTIONS

Written examination 2 hours

25% of qualification

A range of short and longer structured questions, some in a practical context and one essay.

CHOICE OF ONE OPTION

- Human Musculoskeletal Anatomy

A2 UNIT 5

Practical Examination

10% of qualification

#### Career Opportunities And Progression

Biology is a desirable qualification for many professions such as medicine, veterinary medicine, zoology, microbiology, dentistry, pharmacy, nursing, food scientists, pathology, teaching, physiotherapy, research science, environmental science, biotechnology and ophthalmic opticians to name but a few. The skills gained also lend themselves to any research or technical work; especially work involving a practical element. The skills are also applicable to careers in journalism, business and management, psychology and sports related jobs