

Biology - National 4

AWARD RECEIVED

The National 4 Biology course award will be presented on the successful completion of the 4 units of the course: Cell Biology, Multicellular Organisms, Life on Earth and the Added Value Unit.

ENTRY LEVEL –what do I need to do it?

Ideally you will have studied Biology in S2/3 and will have been advised in your report that National 4 Biology is your recommended progression pathway at this point in time. However, if you have not completed the S2/3 Biology Elective it may still be possible to study this course. If you are unsure whether this course is suitable please contact Mrs McDowell (PT Biology & Chemistry) for advice.

COURSE CONTENT: What will I learn?

Practical work plays a large part in the course, which comprises 3 units:

Unit 1 – Cell Biology

Cell division and its role in growth and repair

When you break a bone how does your body repair itself? You will learn about how cells divide and how uncontrolled cell division results in cancer cells.

DNA, genes and chromosomes

What makes us all unique? In this topic you will find out more about DNA.

Therapeutic use of cells

What is genetic engineering? How can stem cells be used to grow artificial organs?

Properties of enzymes and their use in industries

Enzymes are amazing. In this topic you will learn what enzymes are and next you will learn about the fantastic things they do.

Properties of microorganisms and their use in industries

Whether you want to bake bread, brew beer or boost biodiesel, microorganisms are miracle workers.

The effect of limiting factors on photosynthesis

Photosynthesis is fantastic but even it has its limitations. Find out more about it all in this topic.

The process of respiration and the factors that can affect it

Every living thing respire but what is respiration?

Controversial biological procedures

Now is your chance to investigate and debate some of the Biology that has hit the news.

Unit 2 Multicellular organisms

Sexual and asexual reproduction and their importance for survival of species

Learn about the different way that living things make more of themselves? Find out about the advantages of the two types of reproduction.

Propagating and growing plants

Make new plants in a variety of different ways.

Commercial use of plants

Plants are grown to provide food, fuel, raw materials and medicines.

Genetic information

Blame your parents! The genes you have inherited from your mother and father determine your features.

Growth and development of different organisms

You are what you eat. Humans need a balanced diet, water, minerals, vitamins and suitable conditions. To grow and develop plants need WOW; warmth, oxygen and water.

Biological actions in response to internal and external changes to maintain stable body conditions

Why do we shiver when we are cold? Why do we sweat? What is insulin and how does it help us control our blood glucose level?

Unit 3 Life on Earth

Animal and plants species depend on each other

Learn about how animals and plants are interconnected and the impact that the addition/removal of a species has on other species within an ecosystem.

Impact of population growth and natural hazards on biodiversity

What impact have humans had on the planet and what problems are getting worse as there are more and more of us?

Nitrogen cycle

Why did the mushroom have lots of friends? Because he was a fungi. Nitrogen is essential for making proteins. Bacteria and fungi play a vital role in how nitrogen is recycled.

Fertiliser design and environmental impact of fertilisers

Fertilisers can be used to make more food to feed the growing human population but what is the impact of using these?

Adaptations for survival

How does a camel cope? Learn how species adapt to difficult environments.

Learned behaviour in response to stimuli linked to species survival

Can learning to behave help you to survive?

TEACHING METHODS – what will I do?

A ***Curriculum for Excellence*** approach will permeate all topics, giving you opportunities to learn by discovery, take ownership of tasks, make decisions for yourself and relate biology to your everyday life.

You will acquire transferable thinking skills using common cross-curricular language: remembering, understanding, applying, analysing, evaluating and creating. These skills will help you to cope in all aspects of your studies and enable you to take responsibility for your own learning.

ASSESSMENT

Assessment of work will take various forms:

- Traditional pen and paper assessments, covering recall of facts and problem solving skills.
- Skills may be assessed through the design of posters, leaflets or class presentations.
- Self and peer assessments will be utilised.
- To gain N4 you will complete an Added Value Unit which requires you to produce an assignment and sit a test in school. **There is no external assessment.**

HOMEWORK

The weekly homework contains numeracy, literacy and problem solving tasks. It may also include revision of class work, completion of unfinished work and opportunities to complete small projects at home on selected areas of the curriculum.

PROGRESSION

National 5 Biology