

Curriculum Intent

Biology is the science of life and a subject that all students can relate to in many ways. The key stage 3 Biology course aims to build on this. It encourages students to develop an interest and understanding of Biology from the cell to whole organisms.

The course aims for all students to:

- know how to use specialist Biology vocabulary
- bridge the gap between key stage 2 and 4 by increasing their biological knowledge and developing their ability to apply their knowledge to unfamiliar situations, also, to further develop their enquiry skills
- develop practical skills to prepare them for the required practical activities of GCSE.
- develop an improved understanding of cells, whole organisms and interactions between organisms
- embed core concepts so that they can access and apply the key skills needed to enjoy and succeed in Biology

Autumn Term | Breathing and Digestion

Students will learn:-

How the body exchanges gases with the environment
 How drugs affect the body
 How the body breaks down food

How is homework used to enhance learning?

Kerboodle
 BBC bitesize
 AES student science website

Suggested homework tasks

- Learn spelling and definitions of key words.
- Design a submarine to maintain a constant level of oxygen and carbon dioxide (their gas exchange system works in the same way as ours).
- Produce a presentation on illegal drugs.

How will we assess impact?

- Peer and self-assessment
- Previous lesson recap quiz
- Land mark tasks
- End of topic test

Knowledge, understanding & Skills

Describe the structure of the gas exchange system and link this to its function
 Describe the process of breathing and relate this to a model
 State the difference between medicinal and recreational drugs
 Describe the effects of various drugs including alcohol and tobacco smoke on health and behaviour.
 Know that the body needs a balanced diet, for its cells' energy, growth and maintenance.
 Describe the structure of the main parts of the digestive system and relate these to their function.
 Describe the events that take place in order to turn a meal into simple food molecules inside a cell.

What does excellence look like?

- Predict how a change in the gas exchange system could affect other processes in the body.
- Evaluate a model for showing the mechanism of breathing.
- Design a diet for a person with specific dietary needs.
- Critique claims for a food product or diet by analysing nutritional information.
- Make deductions from medical symptoms showing problems with the digestive system.

Spring Term | Respiration and Photosynthesis

Students will learn:-

How the body transfers energy from food by respiration
 Difference between aerobic and anaerobic respiration
 How plants produce food by photosynthesis



What does excellence look like?

- Suggest how organisms living in different conditions use respiration to get their energy.
- Describe similarities and differences between aerobic and anaerobic respiration.
- Suggest how particular conditions could affect plant growth.
- Suggest reasons for particular adaptations of leaves, roots and stems.
- Compare the movement of carbon dioxide and oxygen through stomata at different times of day

How is homework used to enhance learning?

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Suggested homework tasks

- Learn spelling and definitions of key words.
- Research food products made with microorganisms.
- Write a recipe for making bread, explaining each step scientifically
- Plan an experiment to study how light intensity affects the rate of photosynthesis.

“Science is beautiful when it makes simple explanations of phenomena or connections between different observations”, - Stephen Hawkins

How will we assess impact? (3D)

Peer and self-assessment
Previous lesson recap quiz
Land mark tasks
End of topic test

Knowledge, understanding & Skills

- Know respiration is a series of chemical reactions, in cells, that breaks down glucose to provide energy and form new molecules.
- Know most living things use aerobic respiration but switch to anaerobic respiration, which provides less energy, when oxygen is unavailable.
- Use word equations to describe aerobic and anaerobic respiration.
- Explain how specific activities involve aerobic or anaerobic respiration.
- Know that plants and algae use energy from light, together with carbon dioxide and water to make glucose (food) through photosynthesis.
- Describe ways in which plants obtain resources for photosynthesis.
- Explain why other organisms are dependent on photosynthesis.



Summer Term | Evolution and Inheritance

Students will learn:-

The theory of evolution by natural selection
How characteristics are passed on from parent to offspring
The chances of inheriting certain characteristics

How is homework used to enhance learning?

Kerboodle
BBC bitesize
AES student science website

Suggested homework tasks

- Learn spelling and definitions of key words.
- Research and produce a fact sheet about an extinct organism.
- Research an endangered species and conservation efforts.

Knowledge, understanding & Skills

- Know that natural selection is a theory that explains how species evolve and why extinction occurs.
- Explain how a lack of biodiversity can affect an ecosystem.
- Describe how preserving biodiversity can provide useful products and services for humans.
- Know that inherited characteristics are the result of genetic information, being transferred from parents to offspring during reproduction.
- Describe the relationship between DNA, chromosomes and genes.
- Know that gametes, carrying half the total number of chromosomes of each parent, combine during fertilisation.
- Use a diagram to show how genes are inherited. Explain how a change in the DNA (mutation) may affect an organism and its future offspring.

How will we assess impact? (3D)

Peer and self-assessment
Previous lesson recap quiz
Land mark tasks
End of topic test

What does excellence look like?

Predict and explain the changes in a population over time due to natural selection. Suggest an explanation, based on data, for how a particular evolutionary change occurred.
Evaluate ways of preserving plant or animal material for future generations.

International Opportunities

Visits Programmes

- Cruise guided visit on the River Rance
- "Fontaine les Vaucluse – water mills
- La Camargue – marshes vegetation.
- Roussillon – ochre ridge.
- Senckenberg Museum – National History Museum.
- "Physics lesson in school.
- Science Museum"
- "Lake Como – Villa Carlotta and botanical gardens in Tremezza + Villa Monastero in Varenna
- Science and tech museum
- Arese - historical museum Alfa Romeo"
- "Science museum - Foucault's pendulum
- Biology - botanical gardens"
- "Alcázar – guided tour and Camera Obscura
- Tarifa harbour - Whale watching
- Arcos - visit to El Rancho Cortesano (Bee/Honey Museum) - workshop"

Within the curriculum

The KS3 Biology curriculum is designed to introduce students to the key scientific concepts, supported through the study of international examples and theories.

Students are encouraged to engage with scientific concepts and theories beyond the syllabus by exploring key examples of international collaboration, or scientific discovery where the common language of scientific discovery is utilised.

Reference is additionally made to key scientists with connections to countries and cities visited as part of the school's international exchange programme.