

Biology

What will I learn?

Biology will enable you to gain a detailed understanding of how living organisms work and interact. It will help you to develop high-level research skills (both practical and written) and will aid development of information assimilation. These skills are relevant for a large number of careers. The skills acquired are highly valued by employers and are usefully applied on many university courses.

The A Level is awarded based on three terminal papers in Year 13. Practical skills will be assessed through a number of core practicals and endorsed separately.

The A Level consists of the following topics:

- Topic 1: Biological Molecules
- Topic 2: Cells, Viruses and Reproduction of Living Things
- Topic 3: Classification and Biodiversity
- Topic 4: Exchange and Transport
- Topic 5: Energy for Biological Processes
- Topic 6: Microbiology and Pathogens
- Topic 7: Modern Genetics
- Topic 8: Origins of Genetic Variation
- Topic 9: Control Systems
- Topic 10: Ecosystems

What can I do next?

Biology is an interesting and rewarding subject that will allow you to progress to a variety of careers in a wide number of fields including:

medicine, nursing, pharmaceuticals, environmental consultancy, horticulture, agriculture, animal care, laboratory work, forensics.

Further course content

Topic 1: Biological Molecules

This topic introduces the chemicals of life: the organic and inorganic molecules and ions that are fundamental to the structure and physiology of living organisms. The role of monomers in the synthesis of polymers and how the structure and properties of these relate to their functions are considered. An understanding of scientific method is developed in the practical investigation of enzyme action.

Summary

Level: A Level

Duration: 2 years

Qualification:
Edexcel Biology B GCE

Entry Requirements:
A minimum of Maths and English grade 5

Plus:

Combined Science grade 6:6

or

Triple Science grade 6 in Biology and 6 in either Chemistry or Physics

Topic 2: Cells, Viruses and Reproduction of Living Things

This topic considers the ultrastructure of prokaryotes, eukaryotes and viruses. Details of the types of nuclear division are included and how these are involved in animal and plant reproduction. Microscopy and observational skills are developed through the preparation of stained plant tissue.

Topic 3: Classification and Biodiversity

This topic considers the evidence used in the development of models for the classification of organisms. It also considers the limitations of these models. The topic includes the principles underlying natural selection and how this can lead to speciation.

Topic 4: Exchange and Transport

This topic considers the requirements for transport mechanisms in cells and mass flow systems in organisms. The roles of the components of the mammalian circulatory system and the vascular system in plants are studied. Practical skills are developed through the investigation of factors that affect membrane permeability and water potential of plant tissues.

Topic 5: Energy for Biological Processes

This topic builds on knowledge of carbohydrates and enzymes. It considers the sources of energy in living organisms and how energy transfers take place. Details of the stages in respiration and photosynthesis, the roles of co-enzymes and electrons along with the uses of intermediates are included. Practical skills are developed in the investigations of photosynthetic pigments and the factors that affect rates of respiration and photosynthesis.



Staniland Way
Werrington
Peterborough
PE4 6JT
t: 01733 765950
www.kscs.org.uk

For more information please contact the school on
Post16Courses@kscs.org.uk

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