Biology

Examination Board: AQA

Examination Code: 7402

Outline of the Course

The AQA A Level Biology course that we study at Stretford Grammar delves into the intricacies of living organisms, from cell biochemistry to genetics and ecology, and explores the interactions between humans and their environment. It builds upon GCSE knowledge, focusing on fundamental biological concepts and practical skills.
The course aims to develop scientific skills and mental processes, such as analysis and critical thinking, in a framework of biological knowledge and understanding. As well as stimulating your natural curiosity, the course should thoroughly prepare you for employment or higher education.

Topics studied in Year 12 (in order)

Teacher 1:

- Cells
- Organisms Exchange Substances with Their Environment
- Populations in Ecosystems (part of Topic 7)

Teacher 2:

- Biological molecules
- Genetic Information, Variation, and Relationships Between Organisms
- Energy transfers between living organisms in ecosystems (part of Topic 5)

Topics studied in Year 13 (in order)

Teacher 1:

- Energy transfer in living organisms
- Genetics, populations, evolution and ecosystems
- Control of gene expression and use of gene technologies

Teacher 2:

- Organism responses to changes in their internal and external environment

What will you learn?

A-Level Biology involves studying the characteristics of living things in considerable depth, starting at the biochemical level with molecules and progressing through cells, tissues, organs, systems and organisms up to communities and how they interact with each other and the non-living factors around them. The course covers some of the most exciting areas of the biological sciences such as the nervous system, evolution, and genetics. There are a selection of practical activities as part of the course which will both develop and assess your abilities, and make up a practical endorsement qualification alongside your grade.

Here's a more detailed look at the areas you'll study:

- **Topic 1. Biological Molecules**: This section explores the fundamental building blocks of life, including carbohydrates, lipids, proteins (including enzymes), and nucleic acids. You'll learn about their structure, function, and how they interact.

- **Topic 2. Cells**: This topic focuses on the structure and organization of cells, including prokaryotic and eukaryotic cells. You'll examine organelles, cell membranes, cell transport and cell division processes. You'll also learn about cell recognition, and the immune system.

- **Topic 3. Organisms Exchange Substances with Their Environment**: This section investigates how organisms exchange gases, nutrients, and waste products with their surroundings, including the principles of surface area to volume ratio, gas exchange, digestion, absorption, the blood, heart and circulatory system for mass transport in animals, and mass transport in plants.

- **Topic 4. Genetic Information, Variation, and Relationships Between Organisms**: This topic delves into the basics of genetics, including DNA structure, DNA replication and how DNA codes for proteins. You'll also learn about the effects of mutations, and the role of genetic diversity in adaptation and evolution by natural selection, and biodiversity and classification.

- **Topic 5. Energy Transfer in and Between Organisms**: This section explores how energy is transferred within organisms and between organisms in ecosystems. You'll examine the biochemical processes of photosynthesis and respiration, and ecological energy flow.

- **Topic 6. Organisms Respond to Changes in Their Internal and External Environments**: This topic focuses on the body's ability to maintain homeostasis and respond to stimuli. You'll learn about nervous and hormonal systems, and sensory receptors and skeletal muscle.

- **Topic 7. Genetics, Populations, Evolution and Ecosystems**: This section explores the interaction between genetics, populations, evolution, and ecosystems. You'll learn about inheritance patterns, population genetics, evolutionary processes, and the dynamics of ecosystems.

- **Topic 8. The Control of Gene Expression and Use of gene technologies**: This section delves into the mechanisms by which genes are regulated and how gene expression can be altered. You'll learn about control of transcription, translation, and the role of regulatory proteins, as well as epigenetics. The topic goes on to explore developments in gene technologies and genetic engineering.

Mark Breakdown and Assessment

Assessment is via three examination papers at the end of the two-year course which are a mixture of short answer, long answer, comprehension, extended response questions and an essay. Practical skills and critical analysis of data are also examined in these papers.

You will also be awarded a CPAC certificate for successful completion of 12 required practical experiments. This demonstrates to universities that you are competent in the laboratory.

Assessments

Paper 1	Paper 2	Paper 3
What's assessed • Any content from topics 1–4, including relevant practical skills	**What's assessed** • Any content from topics 5–8, including relevant practical skills	**What's assessed** • Any content from topics 1–8, including relevant practical skills
Assessed • written exam: 2 hours • 91 marks • 35% of A-level	**Assessed** • written exam: 2 hours • 91 marks • 35% of A-level	**Assessed** • written exam: 2 hours • 78 marks • 30% of A-level
Questions • 76 marks: a mixture of short and long answer questions • 15 marks: extended response questions	**Questions** • 76 marks: a mixture of short and long answer questions • 15 marks: comprehension question	**Questions** • 38 marks: structured questions, including practical techniques • 15 marks: critical analysis of given experimental data • 25 marks: one essay from a choice of two titles

Website links

Specification: https://cdn.sanity.io/files/p28bar15/green/98cdb01fb651d63df2ab345a2547774092b43bbc.pdf

Key Dates

Exam: May/June Year 13

Further Information	Dr J. Howe – Curriculum Leader for Biology Dr L. Tatton – Subject Teacher for Biology Miss E. Palmer – Subject Teacher for Biology J.howe@stretfordgrammar.com
What can I do after I have completed the course?	Biology is a highly respected and marketable A level qualification and is an excellent preparation for degrees in Medicine, Dentistry, Pharmacy, Veterinary Science, Nursing, Biotechnology, Biochemistry, Neuroscience, Biomedical Sciences, Physiology, Genetics, Food Science and other related courses. Many of our students have gone on to study these subjects at university in the past. Biology is a versatile subject that complements many different subject combinations. Popular combinations include Biology taken with: Chemistry, Maths, Physics, Geography, Psychology or Sociology.