AS and A-Level Biology

Entry Requirements: Grades 6-6 in Combined Science or 6 in Biology and 6 in another science. Grade 6 in Maths
Exam Board: AQA
Subject Leader: Dr A Naylor anaylor@taptonschool.co.uk

Course Description

Biology is the study of living things and life processes. In A-Level Biology you will look in detail at the functions of cells, organ systems, organisms, populations and ecosystems. Starting with the biological molecules that make up living things, you will explore the delicate balance needed for a healthy, functioning body and the interaction of diverse species in ecological settings.

Main Syllabus Area

At AS Level:

Biological molecules – Carbohydrates, lipids, proteins, nucleic acids. Enzymes. DNA replication. ATP.
Cells – Structure of eukaryotic cells, prokaryotic cells and viruses. Microscopy. Transport across cell membranes. The immune system.
Exchange in living organisms – Surface area to volume ratio. Gas exchange. Digestion and absorption. Blood and circulation. Transport in plants.
Genes and variation – DNA and genes. Protein synthesis. Genetic diversity and adaptation. Species and taxonomy. Species diversity.

At A-Level:

Energy transfers – Photosynthesis, respiration, energy in ecosystems, nutrient cycles.
Coordination and control – Detecting stimuli, nervous coordination, muscle contraction, homeostasis.
Genetics and populations – Inheritance, population genetics, evolution, speciation, ecosystems.
Gene technology – Regulation of gene expression, cancer, genetic modification, genetic fingerprinting, diagnosis of genetic diseases.

Method of Assessment

At AS level:

Paper 1: 1 hour 30-minute written paper	75 marks	50% of AS Level.
Paper 2: 1 hour 30-minute written paper	75 marks	50% of AS Level.

At A-Level:

Paper 1: 2 hour written paper	91 marks	35% of A-Level.
Paper 2: 2 hour written paper	91 marks	35% of A-Level.
Paper 3: 2 hour written paper	78 marks	30% of A-Level.

Qualities Required

You need to be passionate about science; inquisitive, analytical and inspired by the functions of living organisms. You must be willing to work hard and give time outside of
lessons to deepen your understanding. You should have good practical skills and the ability to analyse data to spot trends and give explanations.

Links with other subjects

Good ability in Chemistry is highly desirable. Biology also complements subjects such as Psychology and Sports Studies. Maths skills to a high GCSE grade are essential. A-Level Biology can be studied in combination with any other subject. If you are interested, you can do it.

Career Prospects

Universities in the UK offer a wide range of biological degree courses. Many lead directly to employment, e.g. Veterinary Science, Pharmacology, Medicine, Dentistry, Food and Nutrition. Areas such as Biotechnology, Microbiology, Genetics and Environmental Science are becoming increasingly important in society. A biological degree may lead to jobs in research laboratories, medical diagnosis, ecological fieldwork, patient treatment, teaching, business and sales. Some degree courses in medical fields have tuition fees paid by the Department of Health. If your future career lies outside of science, studying A-Level Biology might help you to develop useful skills and ways of thinking.

Enrichment opportunities

Motor Neurone Disease research project (practical laboratory research)
STEM diploma
Seminar Series – Higher education speakers
Journal Club – developing academic literacy and data analysis.

Reading list

The Cartoon Guide to Biology by Larry Gonick and Dave Wessner
Head Start to A-Level Biology – CGP (free on Amazon as a Kindle edition)
The Body – A Guide for Occupants by Bill Bryson (free on Amazon as an audiobook)
Biology Enrichment Pack:

Independent Learning

- Consolidate your notes using the AQA textbook (available on Kerboodle as well) and produce revision resources such as flashcards.
- Use the green homework booklets to complete glossaries and to RAG rate the specification.
- Complete past paper questions available on the AQA website and in the homework booklets. Use a mark scheme to check answers and produce an action plan for further revision.
- Use PubMed to read journals on related topics.
- Read science journals such as New Scientist.