

BIOLOGY KS5 CURRICULUM

ROADMAP

Introduction to A-level Science

Students develop key scientific skills, including data analysis, experimental design, and evaluation of evidence.

This foundation supports effective study and understanding across all A-level Biology topics.

Biological Molecules

This unit explores the structure and function of key biological molecules such as carbohydrates, lipids, proteins, and nucleic acids. It examines how these molecules are essential for life and biological processes.

Organisms Exchange Substances with Their Environment

This topic looks at how organisms exchange gases, nutrients, and waste products. It includes transport systems in animals and plants, and how adaptations affect exchange efficiency.

Cells

Students study cell structure, organelles, and the differences between prokaryotic and eukaryotic cells. The unit also covers transport across membranes and cell division.

Genetic Information, Variation and Relationships Between Organisms

Students learn about DNA, RNA, and protein synthesis, and how genetic information is inherited. It also explores genetic variation, classification, and evolutionary relationships.

Energy Transfers in and Between Organisms

This unit examines how energy flows through ecosystems via photosynthesis, respiration, and nutrient cycles. It highlights how organisms obtain and use energy for survival.

Organisms, Populations, Evolution and Ecosystems

Students investigate how organisms interact with each other and their environments. It covers population dynamics, adaptation, and the principles of ecosystem balance.

Genetics, Populations, Evolution and Ecosystems

This unit builds on earlier genetics work, exploring population genetics, evolution, and speciation. It also considers how environmental factors influence the distribution and abundance of species.

The Control of Gene Expression

Students learn how gene expression is regulated in both prokaryotic and eukaryotic cells. The topic includes the role of gene technologies in studying and manipulating DNA.

Essay Practice and Maths Skills

Students develop the ability to write coherent, evidence-based essays linking multiple biological concepts. Maths skills are strengthened to support data handling, statistical analysis, and interpretation in biology.