

Biology paper 1
35%

Biology paper 2
35%

Biology paper 3
30%

A Level AQA 7401/7402

Learning Journey

Interpret the roles of oncogenes and tumour suppressor genes in the prevention, treatment and cure of cancer.

Balance humanitarian aspects of recombinant DNA technology with environmentalists and anti-globalisation activists

Relate the nature of a gene mutation to its effect on the encoded polypeptide

Evaluate screening and genetic fingerprinting biotechnology

Record and analyse first-hand observations of organisms

Calculate allele, genotype and phenotype frequencies using the Hardy-Weinberg equation.

A level Maths

Gene expression

Required practical: effect of an environmental factor on the distribution of a species.

Populations in ecosystems

DIRT

Evaluate genome projects

Describe regulation of transcription and translation

evaluate the use of stem cells in treating human disorders.

DIRT

Explain how natural selection and isolation may lead to the formation of a new species

DIRT

Predict phenotypic ratios in monohybrid and dihybrid crosses.

Identify position of glands in human body

Describe the roles of actin, myosin, calcium ions and ATP in myofibril contraction.

Nerve impulses

Predict and explain the effects of specific drugs on a synapse.

Explain how evolutionary change has resulted in a great diversity of species.

Genetics and evolution

Mutation and variation

Required practical: produce a calibration curve to identify the concentration of glucose in an unknown 'urine' sample.

Required practical: effect of an environmental variable on movement of an animal using either a choice chamber or a maze.

A level Sport

Use values of heart rate (R) and stroke volume (V) to calculate cardiac output (CO), using the formula $CO = R \times V$

A level Maths

Blood glucose concentration

Receptors – pacinian corpuscles, light receptors in retina

DIRT

Taxes and kineses

DIRT

Calculate gross primary production and the net productivity of producers or consumers from given data

Nutrients, saprobionts and eutrophication

Energy and ecosystems

Responding to change

Skeletal muscles stimulated to contract by nerves act as effectors

Describe how blood water potential is balanced

Extract and interpret graphs of photosynthesis rate involving one limiting factor

Transpiration – Explain mass flow and cohesion tension theory

State when anaerobic respiration occurs

A level Sport

DIRT

Aerobic respiration

Describe genetic diversity and adaptation

Required practical - Use sampling techniques to measure the population size of a common species in a habitat.

End of Year Test

YEAR 13

Energy transfers

Required practical - light intensity and photosynthesis

Evaluate drug development

Interpret data relating to similarities and differences in the base sequences of DNA/ amino acid sequences of proteins

Explain importance of villi in digestion and absorption

Gas exchange

measure and calculate rates of photosynthesis

A level Maths

Recognise stages of the cell cycle: interphase, prophase, metaphase, anaphase and telophase (including cytokinesis)

Evaluate effectiveness of specific vaccines and treatments

Translate information between graphical and numeric form

Genetic variation

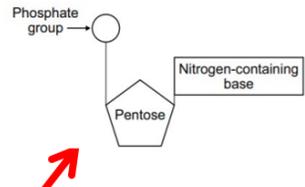
Required practical: Dissection of animal or plant gas exchange system

Organisms and exchange

Recognise expressions in standard form

DNA, genes and chromosomes

protein synthesis



Nucleotides – Understand that condensation reactions form phosphodiester bond.

Describe and Explain mass transport in plants

Describe and explain mass transport in animals

Calculate SA ratio

Human defence systems

Plant organ systems

DNA replication

Water and inorganic ions

DIRT

A level Maths

Cell differentiation – forming different types of cells. Repairing and replacing cells

Prokaryotes and Eukaryotes

Plant cells and organelles including chloroplasts, vacuoles

Required practical: Investigate temp/pH effect on the permeability of cell-surface membranes.

Diffusion, osmosis and active transport

Required practical – using light microscopes to identify stages of mitosis

Cellular biology

Required practical - Production of a dilution series to produce a calibration curve to identify the water potential of plant tissue.

Convert units

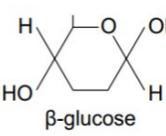
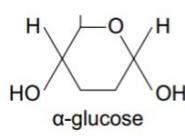
Mitosis, meiosis and cell cycles

A level Maths

$$\text{magnification} = \frac{\text{size of image}}{\text{size of real object}}$$



Specialised cells



Explain synthesis and breakdown of carbohydrates, protein and lipids

DIRT

Proteins – Understand that a condensation reaction between two amino acids forms a peptide bond

Required practical – enzyme controlled reactions

Food test practical - Use qualitative reagents to test for a range of carbohydrates, lipids and proteins

Biological molecules

YEAR 12



Before LeAF Studio?
KS3 Science?
Lab safety?
Scientific method?

Given the hydrogen ion concentration of a solution, calculate its pH, using the formula:
 $pH = -\log_{10} H^+$

A level Maths

Recognise and understand different properties of saturated and unsaturated fatty acids

Triglycerides and phospholipids

Monomers and polymers – hydrolysis breaks a chemical bond between two molecules using a water molecule.

Describe animal cells (eukaryotic) and their organelles including cell membrane, mitochondria golgi apparatus, lysosomes, ribosomes