

YEAR 12 | A LEVEL BIOLOGY

'Becoming an A-Level Biologist'

The curriculum and assessment of students at this stage of education has been carefully designed to develop students into biologists, focusing on deepening understanding gained at GCSE:

Building on the fundamental concepts taught at KS4, students will begin by revisiting and building on these in module 2. Our approach to teaching will be sequential in nature, further securing their understanding of 'foundation knowledge' in biology. Embedded within the curriculum will be opportunities for students to think more critically about biological processes, with an added emphasis on developing higher level practical skills. By the end of the year, students will have acquired the key knowledge and skills needed to succeed in year 13. Students will gain an understanding of more specialist apparatus, and explore routes into a number of careers. We will refer to facts from local and national sources to further broaden students' knowledge of the world.

HALF TERM 1 MODULE 2

All students will know:

- » Cell Structure.
- » Biological Molecules.
- » Nucleotides + Nucleic Acids.
- » Enzymes.

All students will be assessed:

- » Students will be formatively assessed throughout the teaching of each topic using past exam questions, homework activities and quizzes.
- » At the end of each topic, students will sit a summative assessment.
- » Practical Skills (PAGs) - students will be assessed against specified skills and techniques provided by OCR to show competency across a range of activities.

Reading skills needed for this unit:

- » Comprehension.
- » Information retrieval from text.
- » Understanding of command words.

Key vocabulary:

Eukaryotic, prokaryotic, microscope, magnification, resolution, calibration, protein, carbohydrate, lipid, nucleic acid, DNA, active site, inhibitor, cofactor, coenzyme, prosthetic group, collisions.

HALF TERM 2 MODULE 2

All students will know:

- » Plasma Membranes.
- » Cell Division.

All students will be assessed:

- » Students will be formatively assessed throughout the teaching of each topic using past exam questions, homework activities and quizzes.
- » At the end of each topic, students will sit a summative assessment, which may include key ideas from previous topics.
- » Practical Skills (PAGs) - students will be assessed against specified skills and techniques provided by OCR to show competency across a range of activities.

Reading skills needed for this unit:

- » Comprehension.
- » Information retrieval from text.
- » Understanding of command words.

Key vocabulary:

Intrinsic, extrinsic, phospholipid, hydrophilic, hydrophobic, mitosis, meiosis, cell cycle, differentiation, stem cell, totipotent, multipotent, pluripotent.

University visits (e.g. learning to calibrate microscopes), online tutorials, trip to the World Primate Centre.

HALF TERM 3 MODULE 3

All students will know:

- » Exchange Surfaces.
- » Transport in Plants.

All students will be assessed:

- » Students will be formatively assessed throughout the teaching of each topic using past exam questions, homework activities and quizzes.
- » At the end of each topic, students will sit a summative assessment, which may include key ideas from previous topics.
- » Practical Skills (PAGs) - students will be assessed against specified skills and techniques provided by OCR to show competency across a range of activities.

Reading skills needed for this unit:

- » Comprehension.
- » Information retrieval from text.
- » Understanding of command words.

Key vocabulary:

Diffusion, lamellae, spiracle, alveoli, inspiration, expiration, xylem, phloem, transpiration, translocation, xerophytes, hydrophytes.

HALF TERM 4 MODULES 3+ 4

All students will know:

- » Transport in Animals.
- » Classification and Evolution.
- » Disease.

All students will be assessed:

- » Students will be formatively assessed throughout the teaching of each topic using past exam questions, homework activities and quizzes.
- » At the end of each topic, students will sit a summative assessment, which may include key ideas from previous topics.
- » Practical Skills (PAGs) - students will be assessed against specified skills and techniques provided by OCR to show competency across a range of activities.

Reading skills needed for this unit:

- » Comprehension.
- » Information retrieval from text.
- » Understanding of command words.

Key vocabulary:

Haemocoel, haemolymph, endothelium, hydrostatic pressure, carbonic anhydrase, sino-atrial node, systole, diastole, classification, kingdoms, domain, phylogeny, evolution, variation, adaptations, natural selection, pathogen, phagocyte.

HALF TERM 5 MODULE 4

All students will know:

- » Disease.
- » Biodiversity.
- » Module 1 Practical Skills + Development.
- » Module 2-4 Consolidation.

All students will be assessed:

- » Students will be formatively assessed throughout the teaching of each topic using past exam questions, homework activities and quizzes.
- » At the end of each topic, students will sit a summative assessment, which may include key ideas from previous topics.
- » Practical Skills (PAGs) - students will be assessed against specified skills and techniques provided by OCR to show competency across a range of activities.

Reading skills needed for this unit:

- » Comprehension.
- » Information retrieval from text.
- » Understanding of command words.

Key vocabulary:

Lymphocyte, personalised medicine, cytokines, autoimmunity, biodiversity, sampling, quadrat, habitat, species, deforestation, accuracy, validity, precision, limitations, resolution, sampling.

ENRICHMENT OPPORTUNITIES

University visits (e.g. learning to calibrate microscopes), online tutorials, trip to the World Primate Centre.

HALF TERM 6 PRACTICAL SKILLS + CONSOLIDATION (MODULES 1-4)

All students will know:

- » Module 1 Practical Skills + Development.
- » Module 2-4 Consolidation.
- » Ecosystems Introduction

All students will be assessed:

Students will sit two mock examination papers based on the knowledge and skills acquired over the year. Intervention will then follow, allowing students to consolidate areas of weakness in preparation for year 13.

Reading skills needed for this unit:

- » Comprehension.
 - Information retrieval from text.
- » Understanding of command words.

Key vocabulary:

Accuracy, validity, precision, limitations, resolution, sampling, nitrogen cycle, succession.

HOW STUDENTS CAN BE SUPPORTED AT HOME

Websites -

www.physicsandmathstutor.co

mwww.tailoredtutors.co.uk

Textbooks - CGP / Pearson 'OCR Biology A'.

HOW THIS LEARNING WILL BE EMBEDDED ELSEWHERE IN THE CURRICULUM

Maths Skills - use of statistical tests, standard form and percentage change.

Chemistry - understanding of bonding in biological molecules.

YEAR 13 | A LEVEL BIOLOGY

'Becoming an A-Level Biologist'

The curriculum and assessment of students at this stage of education has been carefully designed to develop students into biologists, focusing on deepening understanding gained at AS-Level:

Building on the fundamental concepts taught in year 12, students will explore both animal and plant responses across modules 5 and 6. Our approach to teaching will be sequential in nature, further securing their AS+level knowledge throughout. Embedded within the curriculum will be opportunities for students to think more critically about biological processes, with an added emphasis on developing higher level practical skills. By the end of the year, students will have acquired the key knowledge and skills needed to sit their A-Level exams. Students will gain an understanding of more specialist apparatus, and explore routes into a number of careers. We will refer to facts from local and national sources to further broaden students' knowledge of the world.

HALF TERM 1 MODULE 5

All students will know:

- » Communication + Homeostasis.
- » Hormonal Communication.
- » Excretion.
- » Neuronal Communication.

All students will be assessed:

Students will be formatively assessed throughout the teaching of each topic using past exam questions, homework activities and quizzes (to also incorporate AS content).

At the end of each topic, students will sit a summative assessment.

Reading skills needed for this unit:

- » Comprehension.
- » Information retrieval from text.
- » Understanding of command words.

Key vocabulary:

Endotherm, ectotherm, negative feedback, gluconeogenesis, glycogenesis, glycogenolysis, pacinian corpuscle, glomerulus, hepatocytes, detoxification, neurones, depolarisation, threshold potential, pacinian corpuscle, electrochemical gradient, summation.

HALF TERM 2 MODULE 5

All students will know:

- » Plant + Animal Responses.
- » Photosynthesis.
- » Respiration.

All students will be assessed:

Students will be formatively assessed throughout the teaching of each topic using past exam questions, homework activities and quizzes (to also incorporate AS content).

Students will sit a summative assessment, which may include key ideas from previous topics, at the end of the excretion and respiration topics.

Practical Skills (PAGs) - students will be assessed against specified skills and techniques provided by OCR to show competency across a range of activities.

Reading skills needed for this unit:

- » Comprehension.
- » Information retrieval from text.
- » Understanding of command words.

Key vocabulary:

Phototropism, auxin, indoleacetic acid, gibberellins, chemoreceptors, medulla oblongata, sarcomere, non-cyclic photophosphorylation, Calvin cycle, chemiosmosis, glycolysis.

Students will be given the opportunity to visit an ecologically diverse area to sample a range of organisms, as well as visits / online tutorials with universities to experience degree-level lectures.

HALF TERM 3 MODULE 6

All students will know:

- » Cellular Control.
- » Cloning and Biotechnology.
- » Patterns of Inheritance.

All students will be assessed:

Students will be formatively assessed throughout the teaching of each topic using past exam questions, homework activities and quizzes (to also incorporate AS content).

At the end of each topic, students will sit a summative assessment, which may include key ideas from previous topics.

Students will undergo a mock examination of a 'Biological Processes' paper - this covers module 1, 2, 3 and 5 of the course.

Reading skills needed for this unit:

- » Comprehension.
- » Information retrieval from text.
- » Understanding of command words.

Key vocabulary:

Transcription factors, operon, apoptosis, vegetative propagation, somatic cell nuclear transfer, fermentation, aseptic techniques, phenotype, codominance, dihybrid, epistasis, natural selection, genetic drift.

HALF TERM 4 MODULE 6

All students will know:

- » Cloning and Biotechnology.
- » Manipulating Genomes.

All students will be assessed:

Students will be formatively assessed throughout the teaching of each topic using past exam questions, homework activities and quizzes (to also incorporate AS content).

Students will undergo mock examinations covering modules 1, 2, 3, 4, 5 and 6 of the course.

Reading skills needed for this unit:

- » Comprehension.
- » Information retrieval from text.
- » Understanding of command words.

Key vocabulary:

Allopatric, polymerase chain reaction, electrophoresis, computational biology, fermentation, aseptic techniques.

HALF TERM 5 PRACTICAL SKILLS + REVISION PERIOD

All students will know:

- » Populations + Sustainability.
- » Module 1 Practical Skills – Revision.
- » Module 2-6 'Unified' Revision.

All students will be assessed:

Practical Skills (PAGs) - students will be assessed against specified skills and techniques provided by OCR to show competency across a range of activities.

Students will complete OCR past papers to prepare for their examinations, as well as studying success criteria and mark schemes.

Focus will be on students making links between modules taught.

Reading skills needed for this unit:

- » Comprehension.
- » Information retrieval from text.
- » Understanding of command words.

Key vocabulary:

Limiting factor, carrying capacity, log phase, accuracy, validity, limitations, identify, describe, explain, suggest, evaluate.

HALF TERM 6 REVISION + EXAM PERIOD

All students will know:

- » Module 1-6 Revision.

All students will be assessed:

Students will sit three papers in order to gain their A-Level:

- » Biological Processes (Module 1,2,3+5).
- » Biological Diversity (Module 1,2,4+6).
- » Unified Biology (Modules 1-6).

Reading skills needed for this unit:

- » Comprehension.
- » Information retrieval from text.
- » Understanding of command words.

Key vocabulary:

accuracy, validity, limitations, identify, describe, explain, suggest.

HOW STUDENTS CAN BE SUPPORTED AT HOME

Websites -

www.physicsandmathstutor.com

www.tailoredtutors.co.uk

Textbooks -

CGP / Pearson 'OCR Biology A' ,
OCR Past Paper Finder.

HOW THIS LEARNING WILL BE EMBEDDED ELSEWHERE IN THE CURRICULUM

Maths Skills - use of statistical tests, standard form and percentage change.

Chemistry - understanding of bonding in biological molecules + separation techniques.

Psychology - links to statistical tests and significance of data.