Tarporley Sixth Form College

Biology A Level

Programme of Study

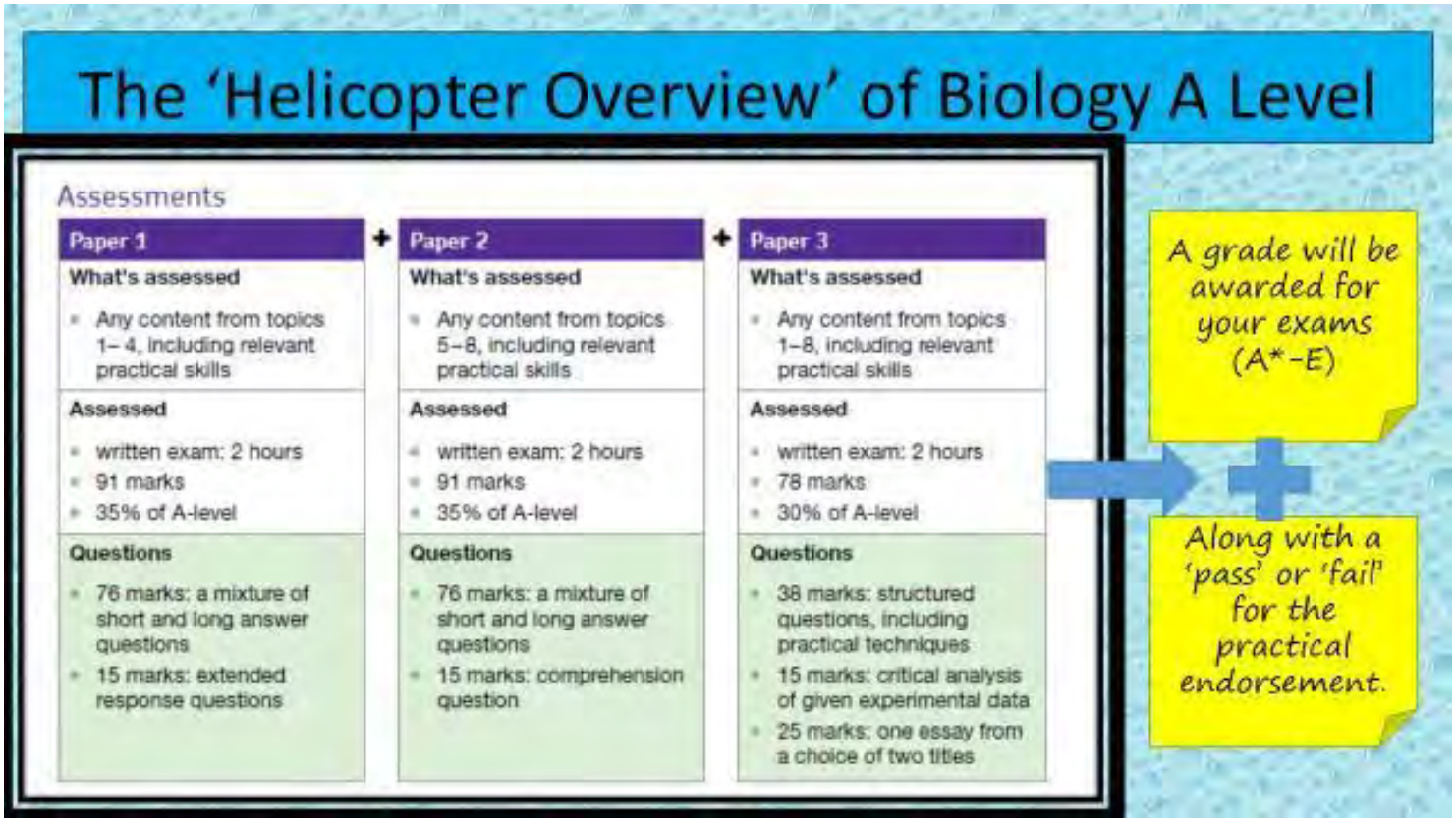
Exam Board: AQA

100% Examination

Plus the practical endorsement

(Centre assessed)

NAME:	
TARGET GRADE	
ASPIRATIONAL GRADE	



Your Assessment Objectives:

AO1 Knowledge	Demonstrate knowledge and understanding of scientific ideas, processes, techniques and procedures
AO2 Application	Apply knowledge and understanding of scientific ideas, processes, techniques and procedures: •• in a theoretical context •• in a practical context •• when handling qualitative data •• when handling quantitative data
AO3 Analysis	Analyse, interpret and evaluate scientific information, ideas and evidence, including in relation to issues, to: •• make judgements and reach conclusions •• develop and refine practical design and procedures.

Weighting of Assessment Objectives:

Assessment objectives (AOs)	Component weightings (approx %)			Overall weighting (approx %)
	Paper 1	Paper 2	Paper 3	
AO1	44–48	23–27	28–32	30–35
AO2	30–34	52–56	35–39	40–45
AO3	20–24	19–23	31–35	25–30
Overall weighting of components	35	35	30	100

10% of the overall assessment of A-level Biology will contain mathematical skills equivalent to Level 2 or above.

At least 15% of the overall assessment of A-level Biology will assess knowledge, skills and understanding in relation to practical work.

Your Key Topics over the Course:

Topic	Key Content
Topic 1 – Biological Molecules.	Biological molecules including carbohydrates, Polysaccharides, Triglycerides, Phospholipids and proteins. You will look in detail at enzyme structure and function.
Topic 2 – Cells	The structure of eukaryotic and prokaryotic cells, viruses and bacteria. You will also learn about measuring cells and investigating cells using cell fractionation. You will look at the stages of the cell cycle including mitosis in detail. You will also look at key cellular processes such as osmosis, active transport and diffusion. You will study the role of the immune system in detail.
Topic 3 – Organisms exchange substances with their environment.	This topic involves studying exchange surfaces such as gills, lungs and leaves. You will look at how the body absorbs key nutrients and the role of bile in digestion. You will study the circulatory system and the effect of exercise. Finally, you will investigate how plants exchange with their environment.
Topic 4 – Genetic Information, Variation and relationships between organisms.	DNA, the genetic code and how it is copied to allow the survival of a species. You will study meiosis in detail and how this causes variation. You will look at evolution in both larger animals as well as smaller (cellular) species. You will also study biodiversity and how we maintain this as biologists.
Topic 5 – Energy Transfers in and between organisms.	One of the most important topics you will need to have a good understanding of is photosynthesis and respiration. This crosses into nearly all of the other topics you will study. This topic also includes nutrient cycles.
Topic 6 – Organisms respond to changes in their internal and external environments.	In this topic you will study the ways in which plants and animals respond to their environment. This includes reflexes, tropisms, taxis and kinesis. It also includes studying the nervous system in detail and the structure and function of muscles. You will learn about how we control blood sugar and the roles of some key hormones in the body. Finally, you will study how the kidney functions and the role of ADH.
Topic 7 – Genetics, populations, evolution and ecosystems.	This includes co-dominance, sex linkage and epistasis. We learn here about key statistical tests such as Chi Squared and Hardy Weinberg. You will also learn about speciation and natural selection as part of evolution.
Topic 8 – Control of Gene expression.	Mutation, Epigenetics, Stem cells, DNA Sequencing and Cloning are some of the areas in which you will study the application of genetics in this topic.

Text Books

There are a variety of different books that you can use to study A level Biology. We recommend the CGP AQA Year 1 & 2 Complete revision and CGP Essential Maths Skills for A Level Biology as your main course companions. Other useful books include the Collins AQA A Level Biology Student Books and the Oxford Biology A Level text book.

You will find other text books in the school library, it is useful to look topics up in more than one book when you find something difficult.

How your course is structured:

Year 12:	Year 12:
• Unit 1: Biological molecules. • Unit 1: Enzymes structure and function • Unit 1: Water, ATP, Nucleic Acids, DNA Practical Assessment 1: RP1 Enzymes	• Unit 2: Cells • Unit 2: Microscopes, magnification, cell fractionation and the cell cycle. • Unit 2: Plasma Membranes, transport across membranes & the immune system. Practical Assessment 2: Required Practical 4 – Beetroot Practical Assessment 3: Required practical 3 - Osmosis Practical Assessment 4: RP2 – Root Tip Squash
Written Assessment 1: Unit 1 and Unit 2 content so far (Autumn 1) Written Assessment 2: Unit 1 and Unit 2 content so far (Autumn 2) Written Assessment 3: All Unit 1 and Unit 2 content (Autumn 2)	
Christmas	**Holidays**
• Unit 4: DNA & the genetic code • Unit 4: translation, transcription and mutations. • Unit 4: Meiosis and variation, chromosomes, genetic diversity and allele frequency. Practical Assessment 6: RP6 – Antibiotics	• Unit 3: Surface area, exchanges in leaves, insects, fish and lungs. • Unit 3: Digestion and absorption. • Unit 3: Circulatory system. Practical Assessment 5: Required Practical 5 – Heart Dissection
Written Assessment 4: Unit 3 and Unit 4 content so far (Spring 1) Written Assessment 5: Unit 1, Unit 2, Unit 3 and Unit 4 content so far (Spring 2)	
Easter	**Holidays**
• Unit 4: Biodiversity, classification and natural selection. • Statistical tests and maths skills for A level Biology. • Unit 5: Photosynthesis Assessment 2: End of Year exam	• Unit 3: Plant exchanges. • Statistical tests and maths skills for A level Biology. • Unit 6: Tropisms, taxis and kinesis, reflexes Assessment 2: End of year exam.
Written Assessment 6: All Unit 3 and Unit 4 content so far (Summer 1) Written Assessment 7: End of Year exam (AS Paper 1 and Paper 2)	
Summer	**Holidays**
Year 13:	**Year 13:**
• Unit 5: Photosynthesis & limiting factors. • Unit 5: Respiration • Unit 5: Energy and Ecosystems • Unit 5: Nutrient cycles. • Unit 8: Mutations, stem cells and transcription factors. Practical Assessment 8: Required Practical 7 – Chlorophyll Chromatography Practical Assessment 9: Required Practical 8 – Photosynthesis Practical Assessment 10: Required Practical 9 – Investigating Respiration	• Unit 6: Control of heart rate. • Unit 6: Autonomic nervous system, nerves, the eye, action potentials. • Unit 6: Muscular Control, homeostasis (Glucose control, kidney & ADH). • Unit 7: Co-dominance, sex linkage and epistasis. Practical Assessment 7: Required Practical 10 – Taxis/Kinesis
Written Assessment 1: Unit 5 and Unit 6 content so far (Autumn 1) Written Assessment 2: Full Year 12 Content Assessment - AS Paper 1 (Autumn 1) Written Assessment 3: All Unit 5 and Unit 6 (Autumn 2)	

How your course is structured:

<table>
<tr><th>Christmas</th><th>Holidays</th></tr>
<tr><td>Unit 8: Epigenetics, RNA interference, tumoursuppressor genes
Unit 8: DNA sequencing and Uses of the Genome
Unit 8: Transgenics, in vivo cloning, applications of gene technology, PCR and fingerprinting.</td><td>Unit 7: Autosomal Linkage, gene pools and investigating gene frequencies.
Unit 7: Variation, natural selection, speciation/
Unit 7: Investigating distribution, succession and managing succession.
Practical Assessment 11: Required Practical 11 – Mock Urine
Practical Assessment 12: Required Practical 12 – Ecology</td></tr>
<tr><td colspan="2">Mock Exams (Spring 1)
Written Assessment 4: Timed Synoptic Essay
Written Assessment 5: Unit 7 and Unit 8 content so far (Spring 2)
Written Assessment 6: Timed Synoptic Essay</td></tr>
<tr><th>Easter</th><th>Holidays</th></tr>
<tr><td>Synoptic Essay Preparation
Critical Analysis
Revision
Timed exam practice</td><td>Maths Skills
Statistics
Revision
Timed exam practice
External exams
Ongoing – timed weekly exam practice</td></tr>
<tr><td colspan="2">Written Assessment 7: Timed Synoptic Essay
Ongoing – timed weekly exam practice
External A Level Biology Exams</td></tr>
<tr><th>Summer</th><th>Holidays</th></tr>
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