

CNCS
A level Biology

Rationale: Across Year 12 and 13, students will build on KS4 Biology content and use this to underpin new learning of the key concepts within Biology. They will develop a secure knowledge of processes within Biology and develop and master practical and analytical skills related to Require Practical activities and data. Students will develop an appreciation for the way in which key concepts within Biology are interlinked and how processes rely on each other.

A learner in A level Biology will know/ have studied:

Year 12:

- Biological molecules
- Cells
- Organisms exchange substances with their environment
- Genetic information, variation and relationships between organisms

Year 13:

- Energy Transfers in and between Organisms
- Organisms respond to changes in their internal and external environments
- Genetics, populations, evolution and ecosystems
- The control of gene expression

A learner in A level Biology will be able to:

- Describe key processes within organisms
- Apply their knowledge to unfamiliar contexts/examples
- Analyse data from tables and graphs
- Evaluate practical methods
- Carry out practical activities with confidence and collect valid result

Year	Term	Outline	Assessment	Home Learning	Key Skills/ End Point
12	1	<p>1: Biological molecules A: Monomers and polymers and the reactions that produce them, carbohydrates, lipids, proteins, enzymes (inc. RP1), factors affecting enzyme activity, enzyme-controlled reactions B: DNA and RNA, ATP, water, inorganic compounds</p> <p>2: Cells A: Eukaryotic cells, prokaryotic cells, studying cells, mitosis (inc. RP2) B: Transport across membranes (inc. RP 3 and 4) C: Antigens, the immune response, immunity and vaccines, antigenic variation, antibodies, HIV and viruses</p>	<p>Pit stops 1A 1B 1C 2A 2B 2C</p> <p>End of term assessment 1 X paper using past exam questions</p>	Research, practice questions and revision	Know and understand the content covered Secure in following a method and able to describe, explain and analyse results Use A level vocabulary in exam questions
	2	<p>3: Organisms exchange substances with their environment A: Surface area:volume, gas exchange in insects, fish and plants (inc. RP 5) gas exchange in humans, effects of lung disease and interpreting data B: Digestion and absorption, haemoglobin, circulatory system, the heart, CVD, transport in plants</p>	<p>Pit stops 3A 3B 4A 4B</p>	Research, practice questions and revision	Know and understand the content covered Secure in following a method and able to describe, explain and analyse results

		<p>4: Genetic information, variation and relationships between organisms A: DNA, genes and chromosomes, RNA and protein synthesis, transcription and translation, genetic code and nucleic acids B: Meiosis, mutations, genetic diversity, natural selection, effects of selection and investigating selection (inc. RP6)</p>	<p>End of term assessment 1 X paper using past exam questions</p>		<p>Use A level vocabulary in exam questions</p>
	3	<p>3: Organisms exchange substances with their environment B: Digestion and absorption, haemoglobin, circulatory system, the heart, CVD, transport in plants (continued)</p> <p>4: Genetic information, variation and relationships between organisms C: Classification, courtship behaviour, DNA and proteins, gene technologies, investigating variation, biodiversity and agriculture</p>	<p>Pit stops 3C 4C</p> <p>End of term assessment 2 x AS Biology papers</p>	<p>Research, practice questions and revision</p>	<p>Know and understand the content covered Secure in following a method and able to describe, explain and analyse results Use A level vocabulary in exam questions</p>
13	1	<p>5: Energy Transfers in and between Organisms A: Introduction to reactions, light dependent reaction, light independent reaction, limiting factors, photosynthesis experiments (inc. RP7,8), aerobic and anaerobic respiration, glycolysis, Krebs cycle, oxidative phosphorylation, respiration experiments (inc. RP9) B: Energy transfer, farming practices, GPP, NPP, nutrient cycles, fertilisers and eutrophication</p> <p>6: Organisms respond to changes in their internal and external environments A: Survival and response, nervous system, tropisms, receptors, control of heart rate (inc. RP 10) B: Neurones and action potentials, synaptic transmission, muscle structure, muscle contraction</p>	<p>Pit stops 5A 5B 5C 6A 6B</p> <p>End of term assessment Yr12 review as baseline Paper 1 mock</p>	<p>Research, practice questions and revision</p>	<p>Know and understand the content covered Secure in following a method and able to describe, explain and analyse results Use A level vocabulary in exam questions</p>
	2	<p>6: Organisms respond to changes in their internal and external environments C: Homeostasis, control of blood glucose, diabetes, the kidneys, control of water potential of the blood (inc. RP 11)</p>	<p>Pit stops 6C 7A 7B</p>	<p>Research, practice questions and revision</p>	<p>Know and understand the content covered Secure in following a method and able to describe, explain and analyse results</p>

	<p>7: Genetics, populations, evolution and ecosystems A: Genetic terms, monohybrid crosses, dihybrid crosses, multiple alleles, codominance, sex linkage, autosomal linkage, epistasis, chi squared test B: Hardy-Weinberg principle, variation and selection, speciation and genetic drift C: Ecosystems, variation in populations, investigating populations (inc. RP 12), succession, conservation</p> <p>8: The control of gene expression A: Mutations and mutagenic agents, cancer, stem cells, regulation of transcription and translation, epigenetic control B: Genome projects, making DNA fragments, amplifying DNA fragments, recombinant DNA technology, gene therapy, gene probes and diagnosis, genetic fingerprinting</p>	<p>7C 8A 8B</p> <p>End of term assessment Term 1 review as baseline Paper 2 and 3 mock</p>		<p>Use A level vocabulary in exam questions</p>
3	<p>Bespoke revision plan</p>	<p>Past paper practice</p>	<p>Research, practice questions and revision</p>	<p>Know and understand the content covered Secure in following a method and able to describe, explain and analyse results Use A level vocabulary in exam questions</p>