

Year 12: Biology

Curriculum Intent: Students follow the two-year OCR A-Level (A) Biology specification building on their existing knowledge from GCSE. In the early stages of the course, students are given a grounding in some of the basic skills they will need for the course. Pupils will then study Module 2: Foundations in Biology, Module 3: Exchange and transport and Module 4: Biodiversity, evolution and disease of the OCR specification form the majority of what is learnt, with key practical skills and techniques being developed alongside this. This consolidates the base knowledge needed to move onto more complex biological processes, genetics and biotechnology year 13. Some topics from Module 6: Ecosystems are also introduced towards the end of the year. Learning is supported by practical work and students will complete approximately 9 practical assessments (PAGs) during the year which count towards their final qualification. Students are taught by 2 teachers



	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Key ideas	Module 2 <ul style="list-style-type: none"> Cell structure Biological Molecules Biological membranes 	Module 2 <ul style="list-style-type: none"> Biological membranes Cell division, cell diversity and cell differentiation. Biological molecules Nucleic acids Enzymes 	Module 2 <ul style="list-style-type: none"> Diversity in plant and animal tissue Module 3 <ul style="list-style-type: none"> Exchange surfaces and breathing Module 4 <ul style="list-style-type: none"> Communicable disease 	Module 3 <ul style="list-style-type: none"> Transport in animals Module 4 <ul style="list-style-type: none"> Communicable disease Biodiversity 	Module 3 <ul style="list-style-type: none"> Transport in plants Module 4 <ul style="list-style-type: none"> Biodiversity Classification and evolution 	Module 3 <ul style="list-style-type: none"> Transport in plants Ecosystems Module 4 <ul style="list-style-type: none"> Classification and evolution Module 6 <ul style="list-style-type: none"> Populations and sustainability
Sequence of Learning (taught by 2 teachers)	Module 2 <ul style="list-style-type: none"> Microscopy, including practical work. Study the ultrastructure of eukaryotic and prokaryotic cells. Structure of the membrane and 	Module 2 <ul style="list-style-type: none"> Biological molecules, including protein, DNA Nucleic acids, DNA replication and protein synthesis. Enzymes as biological catalysts and cofactors. 	Module 2 <ul style="list-style-type: none"> Plant and animal tissue, organs and organ systems Stem cells Module 3 <ul style="list-style-type: none"> Factors affecting enzyme activity. Enzyme inhibitors 	Module 3 <ul style="list-style-type: none"> Transport in animals to include structure and function of the heart and blood vessels. The cardiac cycle and the coordination of the cardiac cycle. 	Module 3 <ul style="list-style-type: none"> Transport of oxygen and carbon dioxide in the mammalian body Module 4 <ul style="list-style-type: none"> Biodiversity, including the calculation of 	Module 3 <ul style="list-style-type: none"> Transport in plants through xylem and phloem. Transpiration & translocation. Adaptation of plants to water availability.

	<ul style="list-style-type: none"> the role of membranes in transporting substances into / out of cells. Biological molecules, including carbohydrates, and lipids. Practical biochemistry to include quantitative and qualitative tests for biological molecules. 	<ul style="list-style-type: none"> the role of membranes in transporting substances into / out of cells. Mitosis and meiosis. Diversity in plant and animal cells. 	<ul style="list-style-type: none"> Gas exchange surfaces in mammals and other organisms. Function and structure of lung tissue. <p>Module 4</p> <ul style="list-style-type: none"> Disease causing pathogens and their transmission. Plant defences against pathogens. Primary and secondary defences against disease. Specific immune response 	<p>Module 4</p> <ul style="list-style-type: none"> Specific immune response. Antibodies and vaccination. The development and use of drugs. Biodiversity, including the calculation of biodiversity and reasons to maintain biodiversity. 	<p>biodiversity and reasons to maintain biodiversity.</p> <ul style="list-style-type: none"> Conservation – <i>in situ</i> & <i>ex situ</i> Classifications systems 	<p>Module 4</p> <ul style="list-style-type: none"> Evidence for natural selection. Studying ecosystems though sampling techniques. Interactions between populations and the determination of population size. Applying statistical techniques <p>Module 6</p> <ul style="list-style-type: none"> Ecosystems Transfer of biomass through the ecosystem. Recycling within ecosystems. Succession Conservation and preservation. Sustainable management.
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Vocabulary	The list of key words is too numerous for inclusion here. The recommended course textbook provides a complete Glossary of key words						
Practical Skills (relevant PAGs)	PAG 8.2 Osmosis through an artificial cell. PAG 5.2 Quantitative investigation of glucose concentration. PAG 9.3 Qualitative testing for glucose Test for lipids	PAG 8.1 Investigate osmosis in potato tissue PAG 5.1 Investigate the effect of temperature on transport across cell membranes in beetroot.	PAG 4.3 Investigate the effect of temperature on enzyme activity.	PAG 2.1 Heart dissection PAG 1.2 Microscopy of a blood smear.		PAG 5.3 Using a potometer to investigate transpiration rate. PAG 10.1 Use RasMol computer simulation to investigate the size of biological molecules.	