Key Stage 5 Biology

We follow the OCR Biology A Speciation. Each class is taught by 2 teachers, with the course split equally. Incorporated within the course are 12 Practical Activities (PAG) which will provide students with the opportunity to achieve a practical endorsement alongside the A level qualification. Students will be assessed throughout the course, completing exam style questions in lessons, end of unit assessments and termly cumulative assessments.

Year 12

	Teacher A	Teacher B
Term 1	**Chapter 2 Biological Molecules** The cells of all living organisms are composed of biological molecules. Proteins, carbohydrates and lipids are three of the key groups of biological macromolecules that are essential for life. **PAG 9 Qualitative testing**	**Chapter 1 - Cellular Structure** Biology is the study of living organisms. Every living organism is made up of one or more cells, therefore understanding the structure and function of the cell is a fundamental concept in the study of biology.
	Chapter 3 Proteins and nucleic acids Nucleic acids are essential to heredity in living organisms. Proteins are key biological molecules essential for life. **PAG 6 Chromatography**	**Chapter 5 - Biological Membranes** Membranes are fundamental to the cell theory. The structure of the plasma membrane allows cells to communicate with each other. **PAG 5 Colorimeter** **PAG 8 Osmosis**
	Chapter 4 - Enzymes Metabolism in living organisms relies upon enzyme-controlled reactions. **PAG 4 Rates of reaction**	
Term 2	**Chapter 7 - Exchange Surfaces and Ventilation** As animals become larger and more active, ventilation and gas exchange systems become essential to supply oxygen to, and remove carbon dioxide from, their bodies. Ventilation and gas exchange systems in mammals, bony fish and insects are used as examples of the properties and functions of exchange surfaces in animals. **PAG 1 Microscopy**	**Chapter 6 - Cell division, Diversity and Organisation** During the cell cycle, genetic information is copied and passed to daughter cells. Microscopes can be used to view the different stages of the cycle. In multicellular organisms, stem cells are modified to produce many different types of specialised cell.
	Chapter 8 - Transport in Animals As animals become larger and more active, transport systems become essential to supply nutrients to, and remove waste from, individual cells. Controlling the supply of nutrients and removal of waste requires the coordinated activity of the heart and circulatory system. **PAG 2 Dissection**	**Chapter 10 and 11 - Communicable diseases, disease prevention and the immune system** Organisms are surrounded by pathogens and have evolved defences against them. Medical intervention can be used to support these natural defences. The mammalian immune system is introduced. **PAG 7 Microbiological techniques**
Term 3	**Chapter 9 Transport in Plants** As plants become larger and more complex, transport systems become essential to supply nutrients to, and remove waste from, individual cells. The supply of nutrients from the soil relies upon the flow of water through a vascular system, as does the movement of the products of photosynthesis.	
	Chapter 12 and 13 Biodiversity and Maintaining Biodiversity Biodiversity refers to the variety and complexity of life. It is an important indicator in the study of habitats. Maintaining biodiversity is important for many reasons. Actions to maintain biodiversity must be taken at local, national and global levels. **PAG 3 Sampling**	**Chapter 14 and 15 - Classification and Evolution** Evolution has generated a very wide variety of organisms. The fact that all organisms share a common ancestry allows them to be classified. Classification is an attempt to impose a hierarchy on the complex and dynamic variety of life on Earth. Classification systems have changed and will continue to change as our knowledge of the biology of organisms develops.

	Year 2 Early start **Chapter 7 Photosynthesis** Photosynthesis is the process whereby light from the Sun is harvested and used to drive the production of chemicals, including ATP, and used to synthesise large organic molecules from inorganic molecules.	Year 2 Early start **PAG 12 Research skills**

Year 13

	Teacher A	Teacher B
Term 1	**Chapter 8 Respiration** Respiration is the process whereby energy stored in complex organic molecules is transferred to ATP. ATP provides the immediate source of energy for biological processes.	**Chapter 10 Patterns of Inheritance** Isolating mechanisms can lead to the accumulation of different genetic information in populations, potentially leading to new species. Over a prolonged period of time, organisms have changed and some have become extinct.
	Chapter 1 Communication and Homeostasis Organisms use both chemical and electrical systems to monitor and respond to any deviation from the body's steady state.	**Chapter 13 Ecosystems** Organisms do not live in isolation but engage in complex interactions, not just with other organisms but also with their environment. The efficiency of biomass transfer limits the number of organisms that can exist in a particular ecosystem.
	Chapter 2 Excretion The kidneys, liver and lungs are all involved in the removal of toxic products of metabolism from the blood and therefore contribute to homeostasis. The kidneys play a major role in the control of the water potential of the blood. The liver also metabolises some toxins that are ingested.	**Chapter 14 Populations and Sustainability** There are many factors that determine the size of a population. For economic, social and ethical reasons ecosystems may need to be carefully managed. To support an increasing human population, we need to use biological resources in a sustainable way.
	Chapter 3 Neuronal Communication The stimulation of sensory receptors leads to the generation of an action potential in a neurone. Transmission between neurones takes place at synapse	
Term 2	**Chapter 5 Animal Responses** In animals, responding to changes in the environment is a complex and continuous process, involving nervous, hormonal and muscular coordination. **PAG 11 Exercise**	**Chapter 11 Manipulating Genomes** Genome sequencing gives information about the location of genes and provides evidence for the evolutionary links between organisms. Genetic engineering involves the manipulation of naturally occurring processes and enzymes. The capacity to manipulate genes has many potential benefits, but the implications of genetic techniques are subject to much public debate.
	Chapter 4 Hormonal Communication The ways in which specific hormones bring about their effects are used to exemplify endocrine communication and control.	**Chapter 12 Cloning and Biotechnology** Farmers and growers exploit "natural" vegetative propagation in the production of uniform crops. Artificial clones of plants and animals can now be produced. Biotechnology is the industrial use of living organisms (or parts of living organisms) to produce food, drugs or other product. **PAG 10 Dataloggers**
	Chapter 6 Plant Responses Plant responses to environmental changes are coordinated by hormones, some of which are important commercially.	**Chapter 9 Cellular Control** The way in which cells control metabolic reactions determines how organisms, grow, develop and function.
Term 3	**Exam preparation**	**Exam preparation**