

<b>A Level Biology (Year 12)</b>	
<b>Half term 1</b>	<b>Foundations in Biology</b> To give a firm grounding in basic Biology students start by learning all about cell structure, cell membranes and biological molecules. They will understand how cells are specialised for functions and be able to apply knowledge to unfamiliar contexts. Biological molecules underpin all of A Level Biology, so students learn about the structure and function of lipids, proteins and carbohydrates. Practical work includes testing for biological molecules and using microscopes to view cells. Students will study nucleic acids and their functions in Biology. They will understand the processes of transcription and translation. They will then move on to look at enzymes and the factors that affect their action. Practical work on these factors will be carried out. Students will also study cell division in plant and animal cells.
<b>Half term 2</b>	
<b>Half term 3</b>	<b>Exchange and Transport</b> Students will study exchange systems in plants and animals, including fish and insects. They will learn how adaptations aid function. Students will study different types of circulatory system in animals. They will carry out dissection of fish and mammal systems. They will then study vessels and learn about how components of the blood form tissue fluid. They will understand how oxygen and carbon dioxide are carried in the blood. Students will then go on to study transport systems in plants.
<b>Half term 4</b>	<b>Biodiversity, evolution and disease</b> Students study communicable diseases, how they are spread and prevented, alongside a study of the human immune system. They will learn about specific examples of diseases of worldwide importance, including HIV. They learn about vaccination and the development of new drugs.
<b>Half term 5</b>	Students will learn about how organisms are classified and how they have evolved from single celled organisms billions of years ago. They will consider the evidence for natural selection and the mechanisms by which it occurs. Once the weather permits, students will complete fieldwork sampling the biodiversity of the local area. They will learn about how biodiversity is estimated on a larger scale and its importance for a sustainable future.
<b>Half term 6</b>	Genetics, evolution and ecosystems Students will start the Year 13 content by studying ecosystems, population and sustainability. While the weather is fine, further fieldwork can be carried out. Students will develop an understanding of interactions within ecosystems, including predator-prey relationships. Students will understand the implications of living sustainably and how active management is important. They will study the nitrogen cycle and conservation.
<b>Independent study expectations</b>	Students are expected to complete at least two hours of independent reading and learning of material each week, on top of specific home learning tasks that may be set. Exam questions are set regularly and much of the note taking and learning needs to be done outside of lesson time to allow for practical work and application of knowledge in the classroom. Good biologists know lots about biology that occurs in the news and are up to date with current scientific thinking.
<b>By the time you finish key stage 5 you'll be...</b>	Able to explain biological processes in plants and animals, applying new knowledge to unfamiliar contexts. You will have completed practical activities that give you a good grounding in basic lab biology and fieldwork.

<b>Biology A Level (Year 13)</b>	
<b>Half term 1</b>	<p><b>Communication, homeostasis and energy</b></p> <p>Students will begin the second year with a study of photosynthesis and respiration. They will learn the detailed biochemistry involved in both reactions and the factors that affect them. An investigation will be carried out as part of the practical endorsement of the course.</p>
<b>Half term 2</b>	<p>Students will study how animal cells communicate. Specifically, they study the nervous and hormonal systems in humans. They will study nerve structure and function, learning how resting and action potentials work. They will study how synapses function and why they are important, applying understanding to unfamiliar contexts. They will study hormonal communication, mostly focusing on the detail of control of blood sugar.</p>
<b>Half term 3</b>	<p><b>Communication, homeostasis and energy continued</b></p> <p>Students will study the structure and function of human liver and kidneys. They will dissect these organs and explain how hormones control the water content of the blood.</p>
<b>Half term 4</b>	<p><b>Genetics, evolution and ecosystems continued</b></p> <p>Students pick this unit up again for the spring, focusing this time on cellular control. This includes the study of mutations, and the control of gene expression in eukaryotes and prokaryotes. They will then move on to study patterns of inheritance, where the mechanisms behind inheritance are applied. Students will be able to explain how features are inherited in complicated contexts.</p>
<b>Half term 5</b>	<p>Genetics, evolution and ecosystems continued</p> <p>Students will learn about how genomes can be manipulated by scientists. They study gene sequencing, DNA profiling, gene therapy, genetic engineering, PCR and gel electrophoresis. This fast-moving branch of biology is fascinating.</p> <p>Finally, students will learn about cloning and biotechnology. They will understand how organisms can be cloned and the applications of biotechnology.</p>
<b>Independent study expectations</b>	<p>Students are expected to complete at least two hours of independent reading and learning of material each week, on top of specific home learning tasks that may be set. Exam questions are set regularly and much of the note taking and learning needs to be done outside of lesson time to allow for practical work and application of knowledge in the classroom. Good biologists know lots about biology that occurs in the news and are up to date with current scientific thinking.</p>
<b>By the time you finish key stage 5 you'll be...</b>	<p>Able to explain biological processes in plants and animals, applying new knowledge to unfamiliar contexts. You will have completed practical activities that give you a good grounding in basic lab biology and fieldwork.</p>