



Year 10 Biology Course outline

Students have four lessons per cycle taught by specialist Biology teachers. Homework is set one-two times per cycle.			
	Topic and approximate duration	Key learning areas	Homework Options: Students will be guided by the class teacher as to which task to complete (according to target grade)
Autumn Term 1	Topic: Organisation (AQA)	<p>In this term we will learn about the human digestive system which provides the body with nutrients and the respiratory system that provides it with oxygen and removes carbon dioxide. In each case they provide dissolved materials that need to be moved quickly around the body in the blood by the circulatory system.</p> <p>Damage to any of these systems can be debilitating if not fatal. Although there has been huge progress in surgical techniques, especially with regard to coronary heart disease, many interventions would not be necessary if individuals reduced their risks through improved diet and lifestyle.</p> <p>Assessed practical: Food tests, Enzyme rates of reaction, Sub topics include: Digestion, food tests, enzymes, enzyme rates of reaction, lungs and their adaptations, blood composition, blood vessels</p>	<p>Task 1: Digestive system Task 2: Enzymes. Task 3: Interpreting graphs Task 4: Blood vessels Task 5: Mind map on organisation</p>
	Nature of landmark assessment	Interim assessment and landmark assessment based on content covered: recall and application questions	
Autumn term 2	Topic: Organisation (AQA)	<p>In this term students will learn about the heart structure, coronary heart disease, non communicable diseases and how our lifestyle can affect our risk of developing them. We will also learn how the plant's transport system is dependent on environmental conditions to ensure that leaf cells are provided with the water and carbon dioxide that they need for photosynthesis. In addition we will learn about plant diseases and how they respond to them</p> <p>Assessed practical: NA Subtopics include: The heart, coronary heart disease, treatment of coronary heart disease, interpreting data based on non communicable diseases, cancer risk, plant transport, plant disease</p>	<p>Task 1: Heart structure Task 2: Communicable diseases Task 3: Treating cancer Task 4: Plant transport Task 5: Plant disease</p>
	Nature of landmark assessment	Interim assessment and landmark assessment based on content covered: recall and application questions	

Spring term 1	Topic: Bioenergetics	<p>In this term we will explore how plants harness the Sun’s energy in photosynthesis in order to make food. This process liberates oxygen which has built up over millions of years in the Earth’s atmosphere.</p> <p>Both animals and plants use this oxygen to oxidise food in a process called aerobic respiration which transfers the energy that the organism needs to perform its functions. Conversely, anaerobic respiration does not require oxygen to transfer energy. During vigorous exercise the human body is unable to supply the cells with sufficient oxygen and it switches to anaerobic respiration. This process will supply energy but also causes the build-up of lactic acid in muscles which causes fatigue.</p> <p>Assessed practical: Investigating the effect of light intensity on rates of photosynthesis</p> <p>Subtopics include: Photosynthesis, factors affecting the rate of photosynthesis, aerobic and anaerobic respiration, how and why the body responds to exercise</p>	<p>Task 1: Photosynthesis Task 2: Rate of photosynthesis Task 3: Respiration Task 4: The impact of exercise</p>
	Nature of landmark assessment	Interim assessment and landmark assessment based on content covered: recall and application questions	
Spring term 2	Topic: Ecology	<p>The Sun is a source of energy that passes through ecosystems. Materials including carbon and water are continually recycled by the living world, being released through respiration of animals, plants and decomposing microorganisms and taken up by plants in photosynthesis. All species live in ecosystems composed of complex communities of animals and plants dependent on each other and that are adapted to particular conditions, both abiotic and biotic. These ecosystems provide essential services that support human life and continued development. In order to continue to benefit from these services humans need to engage with the environment in a sustainable way. In this section we will explore how humans are threatening biodiversity as well as the natural systems that support it. We will also consider some actions we need to take to ensure our future health, prosperity and well-being.</p> <p>Assessed practicals Investigating populations using sampling techniques</p> <p>Sub topics include: Communities; Abiotic and biotic factors; Adaptations; Organisation of an ecosystem; Nutrient cycles;; Biodiversity; Effect of human interaction on ecosystems; Global warming, Maintaining bioiversity</p>	<p>Task 1: Adaptations Task 2: Nutrient cycles Task 3: Biodiversity Task 4: Human impact on biodiversity Task 5: Sampling techniques</p>
	Nature of landmark assessment	Interim assessment and landmark assessment based on content covered: recall and application questions	

Summer term 1	First half Revision and exam week Second half Topic: Inheritance and evolution	<p>In the first half of term classes will revise and prepare for the examination weeks. This will cover content from:</p> <ul style="list-style-type: none"> • Cell Biology • Infection and response • Organisation • Bioenergetics • Ecology 	<p>HW: Revision based tasks – targeted for each group</p>
		<p>This half of the term we will discover how the number of chromosomes are halved during meiosis and then combined with new genes from the sexual partner to produce unique offspring. The structure of DNA and nature of the genome will also be taught.</p> <p>Assessed practical: NA Sub topics include: Reproduction (Sexual and asexual); Meiosis; DNA</p>	<p>Task 1: Sexual vs asexual reproduction Task 2: DNA</p>
	Nature of landmark assessment	<p>Interim assessment and landmark assessment based on content covered: recall and application questions. The landmark assessment completed during examination week will determine whether students cover the Combined or Triple Science in Year 11</p>	
Summer term 2	Topic: Inheritance and evolution	<p>This term we will cover how genes are inherited, including genetic crosses and family trees. Gene mutations occur continuously and on rare occasions can affect the functioning of the animal or plant. These mutations may be damaging and lead to a number of genetic disorders or death. Very rarely a new mutation can be beneficial and consequently, lead to increased fitness in the individual. Variation generated by mutations and sexual reproduction is the basis for natural selection; this is how species evolve. This links to how bacteria become resistant to antibiotics.</p> <p>An understanding of these processes has allowed scientists to intervene through selective breeding to produce livestock with favoured characteristics. Once new varieties of plants or animals have been produced it is possible to clone individuals to produce larger numbers of identical individuals all carrying the favourable characteristic.</p> <p>Assessed practical: NA Sub topics include: Inheritance; Embryo screening; Variation; Natural selection, Selective breeding; Evolution; Antibiotic resistance</p>	<p>Task 1: Genetic crosses Task 2: Embryo screening Task 3: Natural selection vs selective breeding Task 4: Evolution Task 5: Antibiotic resistance</p>
	Nature of landmark assessment	<p>Interim assessment and landmark assessment based on content covered: recall and application questions</p>	