

Year Group: 13	Subject: Biology	Term: Spring 2021
Topic	Key Learning points	Assessment
Topic 5: Energy for Biological processes	<p><i>End Point: To understand the biochemical reactions of photosynthesis and respiration and appreciate the importance of these reactions for living organisms.</i></p> <ul style="list-style-type: none"> • Describe how ATP is formed through phosphorylation. • Know the structure of a mitochondrion and where the stages of respiration take place in the cell. • Understand that a molecule of glucose is manipulated through a series of reactions in respiration to produce ATP. • Be able to describe glycolysis, link reaction, Krebs cycle and the electron transport chain in terms of what is produced i.e. CO₂, NADH, ATP and H₂O. • Know the structure for a chloroplast and where the different reactions of photosynthesis occur in the chloroplast. • Be able to describe the light-dependent reaction and light-independent reaction in photosynthesis. • Know the limiting factors in photosynthesis and how they limit the rate of photosynthesis. • Be able to identify adaptations of extremophile plants and explain how those adaptations help them to survive in extreme environments. 	<p>Students will be formatively assessed during each topic by past paper questions completed in lesson time.</p> <ul style="list-style-type: none"> • Students will complete homework assignments as ongoing assessment of understanding. • Teachers will provide students with targeted feedback, based on their test performance.
Topic 8: Origins of Genetic variation	<p><i>End Point: To understand the mechanisms that allow for genetic variation and be able to explain how our understanding of inheritance has developed over time to inform wider ideas about evolution.</i></p> <ul style="list-style-type: none"> • Know that genetic variation occurs through sexual reproduction and that the heritability of varied traits is essential for the evolution of a species. • Know how Mendel pioneered our understanding of genes through the idea of dominant and recessive alleles. • Be able to complete simple genetic diagrams to explain inheritance of different traits. • Be able to complete di-hybrid crosses to explain the inheritance of more than one trait. • Understand how to use statistical tools like Chi-squared to predict the allelic frequencies and phenotypes of different traits. • Understand that there are some non-Mendelian traits that do not follow the standard rules of dominant and recessive. • Be able to use the Hardy-Weinberg equation to assess the statistical likelihood of allelic frequencies in a population. • Know that differing selection pressures lead to differential evolution. • Know that the founder effect and genetic bottlenecks can lead to speciation. 	<p>At the end of the term students will have a summative assessment. This will be a 60-mark exam paper which will be marked by their teacher.</p>