

Subject: Biology

Year 12	Year 13
<p><u>Biological Molecules:</u> Exploring the fundamental building blocks of living organisms; their structure, function and biological importance.</p>	<p><u>Energy Transfers in and between Organisms:</u> Understanding the biochemical processes of photosynthesis and respiration and how energy is transferred from the sun and flows through ecosystems. Explaining that some sources of energy are finite and need recycling.</p>
<p><u>Cells:</u> Examining the diversity in both structure and function of cells, the biological importance of the plasma membrane and examining cell recognition and signalling.</p>	<p><u>Organisms Respond to Changes in their Internal and External Environment:</u> Examining the various ways organisms control and coordinate their responses to stimuli. Linking this with homeostatic mechanisms in particular the role of the kidney in osmoregulation.</p>
<p><u>Organisms Exchange Substances with their Environment:</u> Investigating how different organisms can exchange materials and the adaptations required. Comparing the importance and mechanisms of transporting substances in plants and animals. In depth analysis of cardiac and respiratory disorders.</p>	<p><u>Genetics, Populations and Ecosystems:</u> Investigating different modes of inheritance and how these impact on populations. Calculating changes in populations and how different selection pressures can affect evolutionary patterns. Comparing different types of speciation.</p>
<p><u>Genetic Information, Variation and Relationships between Organisms:</u> Exploring the causes of biodiversity from genes to the environment; the impact and significance of the biodiversity. Unwinding DNA to understand how it determines a sequence of amino acids and the impact of mutations in that sequence.</p>	<p><u>The Control of Gene Expression:</u> Delving into the world of gene technology and how genes can be manipulated to prevent and treat diseases. Developing a greater understanding of the genetic causes of cancer and evaluating the use of stem cells.</p>