



# Curriculum Map



**Subject:** Science - BIOLOGY

**Year group: 10**

	<b>Autumn 1</b>	<b>Autumn 2</b>	<b>Spring 1</b>	<b>Spring 2</b>	<b>Summer 1 + 2</b>
<p><b>Content</b></p> <p><i>Declarative Knowledge</i> – <i>‘Know What’</i></p>	<p><b>Bio 1:</b> Cell infrastructure and the use of microscopes. Prokaryotic and eukaryotic cells. How cells divide and specialise and the use of stem cells. Anaerobic respiration. How fermentation is used for alcoholic drinks and bread.</p>	<p><b>Bio 2:</b> The ways in which plants are adapted to enable them to survive. Photosynthesis – how the products are used, factors affecting the rate and how it can be artificially controlled. The environmental conditions affecting water movement. How plants transport water. Diffusion and the factors that affect its rate.</p>	<p><b>Bio 3:</b> Osmosis – a special case of diffusion. How cells move substances against a concentration gradient. How certain organisms use organ systems to overcome large diffusion distances. How exchange surfaces are adapted to ensure cells obtain required nutrients. Transport and exchange systems of different organisms – fish and mammals. Functioning of enzymes – theory and specific enzymes involved in digestion.</p>	<p><b>Bio 4:</b> Environmental factors affect the risk of disease. Lifestyle choices can affect the chance of developing non-communicable disease, including cancer. How communicable diseases are spread. How pathogens can cause disease and how we may control it. How the body is adapted to protect us from pathogens. The use of vaccinations to protect against viruses and bacteria. How plant disease is caused and detected. Plant defence mechanisms.</p>	<p><b>Bio 5:</b> How the body regulates its internal environment. The actions of the nervous and endocrine systems. The structure and function of the brain. How temperature is regulated through both nervous and hormonal mechanisms controlled by the brain. How glucose, water and salt levels are regulated, including detail on kidney function. How sexual development and reproduction is controlled. Contraception and fertilisation management. How plants use hormones to control response to stimuli.</p>
<p><b>Skills</b></p> <p><i>Procedural Knowledge</i> – <i>‘Know How’</i></p>	<p>Lab techniques are used to grow microorganisms. How to test the efficacy of antibiotics, antiseptics and disinfectants.</p>	<p>To investigate the effect of changing light intensity on photosynthesis rate.</p>	<p>To investigate the effect of different solution concentrations on the mass of plant tissue. The pH effects the rate of reaction for amylase enzymes. How to test for a range of carbohydrates, lipids and proteins.</p>	<p>How to assess risk factors.</p>	<p>How to investigate reaction time, including human response to a stimulant.  How to investigate the effect of light and gravity on the growth of germinating seeds.</p>
<p><b>Key Questions</b></p>	<p>What features do certain cells have in common? How do we and should we use stem cells? How do organisms become more complex?</p>	<p>How are plants adapted to survive? What factors affect the rate of photosynthesis?</p>	<p>How are more complex organisms adapted to provide nutrients for all cells? How does surface area to volume ratio affect an organisms ability to survive?</p>	<p>How do animals and plants protect themselves from harmful pathogens? What factors make the contraction of disease more likely?</p>	<p>How does the body control glucose / blood / salt levels? How is constant core body temperature maintained? How do plants respond to their environment?</p>
<p><b>Assessment</b></p>	<p>Bio 1 topic test – exampro.</p>	<p>Bio 1 and 2 topic test – exampro.</p>	<p><b>Bio 3, 2, 1 topic test – exampro.</b></p>	<p>Bio 4, 3, 2, 1 topic test – exampro.</p>	<p><b>Bio 5, 4, 3, 2, 1 – topic test – exampro.</b> <b>May Year 10 PPE exam on Paper 1 content.</b></p>



# Curriculum Map



<b>Literacy / Numeracy / SMSC / Character</b>	Magnification calculations. How to make estimates of size.	How to calculate surface area to volume ratio.	How to interpret tables, charts and graphs.	How to conduct sampling techniques without introducing bias.	Calculating mean averages, using these to determine repeatability. Estimating uncertainty [range over mean].
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