

# Science - Biology



## Year 10 Curriculum Map




## Year 10 – Autumn Term Biology B1 - Cells and B2 - Organisation

<b>Prior Learning</b>	<p><b>B1 – Cells</b> At key stage 3, pupils will have learnt the differences between plant and animal cells. Pupils should be able to use a microscope and explain the differences between cells from different organisms. Pupils should know how some cells are specialised and adapted to their functions, and how substances can move by diffusion.</p> <p><b>B2 - Organisation</b> At key stage 3 and key stage 4, pupils will have learnt the differences between plant and animal cells. Pupils should be able to describe how the lungs work. Pupils should understand the digestive system; role of organs in the digestive system, that enzymes help break food up and parts of the blood.</p>
<b>What will I learn?</b>	<p><b>B1 – Cells</b> In this unit, pupils will learn the difference between eukaryotes and prokaryotes. Pupils will be able to use the magnification equation. Pupils will understand the function of the organelles in plant and animals' cells. Pupils will be able to explain how developments in microscopy have allowed us to find out more about the sub-cellular structures in plants, animal and bacterial cells. They will also be able to explain how substances are carried by diffusion, osmosis and active transport</p> <p><b>B2 - Organisation</b> In this unit, pupils will learn the role of enzymes in digestion, structure and adaptations of the digestive system. Pupils will be able to explain the practical enzymes, osmosis and food tests. Pupils will describe the structure and function of the heart, blood and blood vessels. They will be able to describe the adaptation of exchange surfaces and plant surfaces, and be able to explain the surface area to volume ratio.</p>
<b>How will I be assessed?</b>	<p>Formative – Recall 5, Cold calling, skills such as graphs in books, retrieval homework task, mid topic assessment.</p> <p>Summative – End of topic assessment.</p>
<b>Next Steps</b>	<p><b>B1 – Cells</b> This topic is integral to the Biology components of Combined Science. It will be revisited in units 1-7 of the Biology course</p> <p><b>B2 - Organisation</b> This topic build upon prior knowledge from key stage 3 and expands the concepts. Pupils will develop their ideas of plant structures, the heart and exchange surfaces in the B4 - Bioenergetics unit.</p>
<b>Opportunities for Independent Learning</b>	<p><b>B1 – Cells</b> Pupils could use an inexpensive microscope to explore substances at home (pupils can get traditional light microscopes that can be purchased easily from toy shops, however digital ones that attach to smartphone cameras are also readily available). <a href="#">Focus eLearning by Focus Educational Software Ltd.</a> <a href="#">BBC Bitesize Key Concepts in Biology</a> <a href="#">Using a microscope core practical</a> <a href="#">Osmosis core practical video</a> Pupils will use their revision guides to answer the multiple-choice homework.</p> <p><b>B2 - Organisation</b> Pupils can use smartwatches to record their heart activity during exercise at home. <a href="#">Focus eLearning by Focus Educational Software Ltd.</a> <a href="#">Enzyme core practical video</a></p>

	Pupils will use their revision guides to answer the multiple-choice homework.
<b>Personal Development and CEIAG</b>	<p><b>B1 – Cells</b> In this topic you will develop an understanding of how modern technologies have helped scientific advancements e.g. microscopy. You will learn about everyday phenomena and develop an understanding of how all living things are built and operate. This topic has links with various careers such as biomedical science and microscopy.</p> <p><b>B2 - Organisation</b> In this topic, pupils will discover how parts of the body work and how nutrition is a key component of health. This topic has links with various careers such as nursing, medicine, sports Science and nutrition.</p>
<b>Enrichment Opportunities (Cultural Capital)</b>	<p><b>B1 – Cells</b> Pupils will get the opportunities to use microscopes after school to study items they can bring from home <a href="#">Carry out an osmosis experiment at home</a></p> <p><b>B2 - Organisation</b> Pupils will get the opportunities to dissect hearts in lesson and after school <a href="#">Virtual Enzyme Lab</a></p>

	<p><b>Year 10 – Spring Term</b> <b>Biology</b> <b>B3 - Infections and Response</b></p>
<b>Prior Learning</b>	At key stage 3 and key stage 4, pupils should have learnt how diseases are transmitted between people and how drugs can be used to treat disease. Pupils should also know about the structure of the heart and lungs and of the reproductive organs.
<b>What will I learn?</b>	In this unit, pupils will learn the difference between communicable and non-communicable diseases. Pupils will learn about viral diseases - HIV, Measles and TMV, bacterial diseases - Gonorrhoea and Salmonella, protist disease – Malaria and fungal disease - Rose black spot. Pupils will learn about how white blood cells help us fight disease and how vaccinations can make us immune.
<b>How will I be assessed?</b>	Formative – Recall 5, Cold calling, skills such as graphs in books, retrieval homework task, mid topic assessment. Summative – End of topic assessment.
<b>Next Steps</b>	This subject content is not revisited in other units. It will be covered in targeted revision sessions but should form part of a detailed revision plan at home using the provided revision guides.
<b>Opportunities for Independent Learning</b>	<a href="#">Focus eLearning by Focus Educational Software Ltd.</a> Mastery booklets sent home to parents to work through independently Pupils will use their revision guides to answer the multiple-choice homework
<b>Personal Development and CEIAG</b>	In this topic, pupils will learn how your health can be affected by various factors. Pupils will develop an understanding of how to keep healthy and how medicine can be developed and used to treat illness and disease. These will lead to careers in medicine, immunology and other health care professionals.
<b>Enrichment Opportunities</b>	<a href="#">Medical Museum- Leeds</a> <a href="#">Virtual Virus Lab game</a> <a href="#">World Health Organisation website</a> – research diseases you are interested in

<b>(Cultural Capital)</b>	<a href="#">BBC Operation Ouch!!</a>
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	 <b>Year 10 – Summer Term</b> <b>Biology</b> <b>B4 - Bioenergetics</b>
<b>Prior Learning</b>	At key stage 3 and key stage 4, pupils should have learnt how plants have adaptation to allow them to absorb light and water. Pupils should know that gases diffuse and water moves by osmosis and that the surface area to volume ratio affects the rate of diffusion. Pupils should be able to explain the movement of water and sugars through a plant. Pupils should be able to explain the structure of the heart and lungs and the effects of exercise. Pupils should be able to describe how exercise can be linked to a healthy lifestyle.
<b>What will I learn?</b>	In this unit, pupils will learn the process of photosynthesis, factors that affect the rate of photosynthesis and the required practical for photosynthesis. Pupils will learn about the process of respiration and the effect of exercise on the rate of respiration.
<b>How will I be assessed?</b>	Formative – Recall 5, Cold calling, skills such as graphs in books, retrieval homework task, mid topic assessment. Summative – End of topic assessment.
<b>Next Steps</b>	This topic build upon the knowledge from B2 – Organisation and expands it further. Pupils will use the knowledge of photosynthesis and respiration in their understanding of how global warming is causes in B7 – Key Ideas.
<b>Opportunities for Independent Learning</b>	<a href="#">Focus eLearning by Focus Educational Software Ltd.</a> Mastery booklets sent home to parents to work through independently Pupils will use their revision guides to answer the multiple-choice homework <a href="#">BBC Bitesize Plants and Photosynthesis</a> <a href="#">Photosynthesis Core Practical</a>
<b>Personal Development and CEIAG</b>	In this topic, pupils will learn how photosynthesis and respiration are linked. This will lead pupils into careers in botany, ecology, sport science and environmental science.
<b>Enrichment Opportunities (Cultural Capital)</b>	Pupils will get the opportunity to use technology to record heart rates and link these to exercise <a href="#">BBC Life of Plants</a> <a href="#">Photosynthesis in education</a>