

## What are the aims and intentions of this curriculum?

The aim of the Year 9 Curriculum Intent is to facilitate engaging lessons and promotes teaching for understanding rather than covering fragmented content. This section of the syllabus follows from the year 7 and 8 topics in a spiral curriculum. Using a logical order of objectives, to allow students to understand Biology, Chemistry and Physics holistically by using big ideas and mastery goal tasks to equip students for success at GCSE.

The SOW below list clearly what our students need to know and be able to do. Further sections outline the opportunities to develop Scientific Communication Skills as well as the requirements for the skills in working scientifically, maths and practical assessment. Students will engage in practical activities which will help them develop the skills which they will need to undertake the required practicals in KS4. The subject content is presented clearly, in a logical teaching order, with opportunities for skills development throughout the Scheme of Work. This SOW provide opportunities and preparation for progression onto GCSE.

Term	Topics	Knowledge and key terms	Skills developed	Assessment
Summer 2	Physics <ul style="list-style-type: none"> <li>Energy</li> <li>Waves</li> </ul>	Students will learn: <ul style="list-style-type: none"> <li>About energy changes in a system, the ways energy is stored before and after such changes, conservation and dissipation of energy and national and global energy resources.</li> <li>About waves in air, fluids and solids, and electromagnetic waves.</li> </ul>	Students are able to: <ul style="list-style-type: none"> <li>Explain energy stores and energy transfers.</li> <li>Explain that sound waves are mechanical waves which travel through a medium such as air or water, and light waves are examples of electromagnetic waves which travel very quickly through vacuum as well as media such as air or glass.</li> </ul>	<ul style="list-style-type: none"> <li>Practical work</li> <li>Required practical: Specific heat capacity of a material</li> <li>Required practical: Ripple tank</li> <li>Required practical: Infrared radiation.</li> <li>Chapter review questions</li> <li>End of Chapter Examination</li> </ul>
Autumn 1	Biology <ul style="list-style-type: none"> <li>Cell structure</li> <li>Cell division</li> <li>Transport in cells</li> </ul>	Students will learn: <ul style="list-style-type: none"> <li>About eukaryotic and prokaryotic cells, animal and plant cells in more detail, and microscopy.</li> <li>The structure of chromosomes, mitosis, stem cells and cell differentiation.</li> <li>About diffusion, osmosis and active transport.</li> </ul>	Students are able to: <ul style="list-style-type: none"> <li>Explain the functions of plant, animal and bacterial cells.</li> <li>Use of models to describe chromosomes, genes and DNA.</li> <li>Explain diffusion in terms of the particle model.</li> </ul>	<ul style="list-style-type: none"> <li>Required practical: Light microscope.</li> <li>Required practical: Osmosis</li> <li>Chapter review questions</li> <li>End of Chapter Examination</li> </ul>

<b>Autumn 2</b>	<p>Biology</p> <ul style="list-style-type: none"> <li>Principles of organization</li> <li>Animal tissues, organs and organ systems</li> <li>Plant tissues, organs and organ systems</li> </ul>	<p>Students will learn:</p> <ul style="list-style-type: none"> <li>About the organizational hierarchy, the principles of organization, the human digestive system and its enzymes, the heart and vessels, blood, related health issues, the effects of lifestyle, and cancer.</li> <li>About the structure and organization of plant tissues, and transportation in plants</li> </ul>	<p>Students are able to:</p> <ul style="list-style-type: none"> <li>Explain that the human digestive system has a range of tissues and organs that are adapted for digesting and absorbing food.</li> <li>Explain that plants make carbohydrates in their leaves by photosynthesis and gain mineral nutrients and water from the soil via their roots.</li> </ul>	<ul style="list-style-type: none"> <li>Required practical: Food test.</li> <li>Required practical: pH test on amylase enzyme</li> <li>Chapter review questions</li> <li>End of Chapter Examination</li> </ul>
<b>Spring 1</b>	<p>Chemistry</p> <ul style="list-style-type: none"> <li>Atomic structure</li> <li>Periodic table</li> <li>Chemical, ionic, covalent &amp; metallic bonding</li> </ul>	<p>Students will learn:</p> <ul style="list-style-type: none"> <li>About the structure of atoms, reactions of elements, the periodic table and mixtures.</li> </ul>	<p>Students are able to:</p> <ul style="list-style-type: none"> <li>Explain that compounds have different properties from the elements from which they are made.</li> </ul>	<ul style="list-style-type: none"> <li>Practical activities</li> <li>Chapter review questions</li> <li>End of Chapter</li> </ul>
<b>Spring 2</b>	<p>Chemistry</p> <ul style="list-style-type: none"> <li>Bonding structure and properties</li> <li>Structure and bonding of carbon</li> <li>Bulk and surface properties of matter including nanoparticles</li> </ul>	<ul style="list-style-type: none"> <li>About ionic, molecular, giant covalent and metallic substances, as well an overview of the types of bonding and structures, nanoscience and the different forms of carbon</li> </ul>	<p>Describe that different substances have different properties, such as melting points, electrical conductivity, etc.</p>	<ul style="list-style-type: none"> <li>Practical activities</li> <li>Chapter review questions</li> <li>End of Chapter</li> </ul>
<b>Summer 1</b>	<p>Physics</p> <ul style="list-style-type: none"> <li>Forces</li> <li>Electromagnetism</li> </ul>	<p>Students will learn:</p> <ul style="list-style-type: none"> <li>How to describe how forces can change the shape of an object.</li> <li>How to describe the factors affecting the strength of an electromagnet: the current, the core and the number of coils in the solenoid.</li> </ul>	<p>Students are able to:</p> <ul style="list-style-type: none"> <li>Describe how materials behave as they are stretched or squashed.</li> <li>Explain how to practically change the strength of an electromagnet.</li> </ul>	<ul style="list-style-type: none"> <li>Required practical: Hooke's law</li> <li>Chapter review questions</li> <li>End of Chapter Examination</li> </ul>