

Year 7 Science Curriculum Map

Students will study the following nine units this year.

Unit Title	Description
Particles	In this unit pupils study the properties of the different states of matter (solid, liquid, and gas) in terms of particle model, exploring the differences in arrangement, motion, and density. Pupils will study the conservation of material and of mass, and reversibility, in melting, freezing, evaporation, sublimation, condensation and dissolving. Pupils will also explore how diffusion in liquids and gases is driven by differences in concentration with specific focus on Brownian motion in gases. Pupils will also use the particle model to explain gas pressure and describe the factors that affect gas pressure. Pupils will delve into a simple atomic model and identify differences between atoms, elements, and compounds. Lastly the unit covers the basis of chemical symbols and formulae for elements and compounds.
Working scientifically	<p>This unit give students the opportunity to develop working scientifically skills. Students will learn the term hypothesis and be able to write an hypothesis for different scientific investigations. They understand the meaning of variables in science and be able to identify independent, dependent and control variables. Students will become confident in writing methods for practical investigations as well as drawing tables and presenting data collected scientifically. They will be able draw bar charts or line graphs to present results and be able to identify when to use them. Students will learn how to analyse results and write conclusions. They will also understand the importance of evaluating scientific investigations and be able to evaluate the investigations they carry out.</p> <p>This year, students will have the opportunity to undertake six working scientifically investigations throughout the year. These investigations will require students to design and carry out experiments in the three fields of science (biology, chemistry, and physics). Students will collect, present, and analyse results of scientific investigations to devise conclusions.</p>
Cells and Organisation	The unit covers components of cells and the differences between plants and animal cells, how cells can be specialised and respiration. They will describe different levels of hierarchical organisation with regards to unicellular and multicellular organisation. They will describe how cells are adapted for different functions. Pupils should learn that plant and animal cells have a cell surface membrane which keeps the cell together and controls what enters and leaves; that cells have a cytoplasm which occupies most of the cell; that cells have nuclei which control activities of the cell. Students will learn how to interpret, observe, and record cell structure using a light microscope.
Forces	Units covers aspects forces which include forces at a distance as well as balanced and unbalanced forces. The students will find out where they can come across forces and how forces can act on objects. – How do things balance. They will study forces and their effects – How do different materials stretch? The unit explores what friction does, where do we come across forces and why things float. Hooke's law as a special case will be investigated
Diet and Digestion	In this unit pupils will explore the content of a healthy human diet: carbohydrates, fats, proteins, vitamins, minerals, dietary fibre and water, and why each is needed. They will be required to carry out calculations of energy requirements in a healthy daily diet in addition to studying the consequences of imbalances in the diet, including obesity, starvation, and deficiency diseases. Pupils will also study the tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes

	<p>simply as biological catalysts). Pupils will also explore the importance of bacteria in the human digestive system. This unit also covers the skeletal and muscular system. Pupils will learn the interaction between skeleton and muscles, including the measurement of force exerted by different muscles. In this unit there will be a focus on literacy skills, students will produce a big writing on the digestive system.</p>
Mixtures	<p>In this unit pupils will explore the concept of a pure substance. Pupils will classify some solids as soluble or insoluble and explain the meaning of the term 'saturated solution'. Pupils will also describe how mixtures can be separated by distillation and chromatography and will use the particle model to explain what happens when a solid dissolves in water, explaining why mass is conserved. Pupils will also describe how pure water can be obtained from sea water and how different colours can be separated from some inks. Pupils will also explore other simple techniques for separating mixtures: filtration, evaporation, distillation, and chromatography</p>
Energy	<p>Pupils will also study the range of fuels used domestically and in industry. Pupils will describe how renewable energy resources can be used to generate electricity and provide heating. Pupils will compare the advantages and limitations of a range of energy resources. In this unit pupils will carry out a number of calculations of fuel uses and costs in the domestic context. They will compare the energy values of different foods and explain data on food intake and energy requirements for a range of activities. They will also compare the amounts of energy transferred in various appliances in watts and evaluate the different power ratings of appliances.</p>
Sound and Light	<p>In this unit pupils will describe the different types of waves and their features. Pupils will relate changes in pitch and loudness of sounds to changes in vibrations and relate these to the oscilloscope representations of waves. This unit covers the similarities and differences between light and waves in matter. Pupils will explore how light waves travels through a vacuum as well as the transmission of light through materials by investigating absorption, diffuse scattering, and specular reflection at a surface. Pupils will explain the origin of colour and the different frequencies of light whilst also studying differential colour effects in absorption and diffuse reflection.</p>
Solar system	<p>This unit enables the students to work independently while developing skills and content knowledge. The students studied the scale of the universe, planets, impact craters, craters 2 and deep impact, seasons and cycles</p>