

Science - Biology/Chemistry/Physics

Programme of Study	<p>Year 7 Milestones</p> <p>Biology</p>
Reproduction (including Plants)	<p>Identify reproduction in humans (as an example of a mammal), including the structure and function of the <u>male and female reproductive systems</u></p> <p>Explain the menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta</p> <p>Identify reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal</p> <p>Investigate some dispersal mechanisms</p> <p>Recognise the importance of plant reproduction through insect pollination in human food security</p>
Skeletal and Muscular Systems	<p>Identify the structure and functions of the human skeleton, to include support, protection, movement and <u>making blood cells</u></p> <p>Recognise biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscles</p> <p>Identify the function and antagonistic actions of major muscle groups</p>
Respiration and Breathing Systems	<p>Explain aerobic and anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life</p> <p>Identify the word equation for aerobic respiration</p> <p>Recognise the process of anaerobic respiration in humans and micro-organisms, including fermentation, and the word equation for anaerobic respiration</p> <p>Explain the differences between aerobic and anaerobic respiration.</p>
Cells and organisation	<p>Identify cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope</p> <p>Explain the functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and <u>chloroplasts</u></p> <p>Recognise the similarities and differences between plant and animal cells</p> <p>Identify the role of diffusion in the movement of materials in and between cells</p> <p>Explain the structural adaptations of some unicellular organisms</p> <p>Identify the hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms</p>
	<p>Chemistry</p>
Particulate Nature of Matter	<p>Explain the properties of different state of matter (Solid, Liquid and Gas) in terms of the particle model, including <u>gas pressure</u></p> <p>Identify changes of state in terms of the particle model</p> <p>Explain diffusion in terms of the particle model</p> <p>Recognise similarities and differences, including density differences, between solids, liquids and gases</p> <p>Explain Brownian motion in gases</p> <p>Explain diffusion in liquids and gases driven by differences in concentration</p> <p>Identify the difference between chemical and physical changes.</p> <p>Identify the differences in arrangements, in motion and in closeness of particles</p> <p>Explain changes of state, shape and density plus the anomaly of ice - water transition</p>

The	Recognise energy in matter changes with temperature in motion and spacing of particles
	Identify internal energy stored in materials.
Pure and Impure Substance	Explain the difference between a pure substance and mixtures, including dissolving
	Explain techniques for separating mixtures: chromatography, filtering, evaporation and distillation
	Identify pure substances and the concept of a pure substance
	Physics
Forces, Pressure and Motion	Identify forces as pushes or pulls, arising from the interaction between two objects
	Know how to use force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces
	Explain moment as the turning effect of a force
	Identify forces associated with deforming objects such as stretching and squashing springs
	Identify forces of friction between surfaces, resistance to motion of air and water
	Explain that forces are measured in newtons and measurements of stretch or compression as a force is changed
	Recognise extension linear relation; Hooke's Law as a special case
	Identify work done and energy changes on deformation
	Recognise non - contact forces such as gravity forces acting at a distance on Earth and in space
	Identify the forces between magnets and forces due to static electricity.
	Explain opposing forces and equilibrium such as weight held by stretched spring or supported on a compressed surface.
	Explain forces being needed to cause objects to stop or start moving
	Identify that forces change their speed or direction of motion and change depends on direction of force and its size.
Current and Static Electricity	Identify the separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects
	Recognise the idea of electric field, forces acting across the space between objects not in contact.