

Biology	Autumn 1 – 7 weeks	Autumn 2 – 7 weeks	Spring 1 – 6 weeks	Spring 2 – 5/6 weeks	Summer 1 – 5/6 weeks	Summer 2- & weeks
Course topic	Biology: Ecosystems		Biology Organisation-Cells and Movement		Biology: Digestion and Gas Exchange systems	
<b>Powerful/Core Knowledge</b>  <b>Including key people and stories</b>	<p>Organisms in a food web (decomposers, producers and consumers) depend on each other for nutrients. So, a change in one population leads to changes in others. The population of a species is affected by the number of its predators and prey, disease, pollution and competition between individuals for limited resources such as water and nutrients.</p> <p>Plants have adaptations to disperse seeds using wind, water or animals. Plants reproduce sexually to produce seeds, which are formed following fertilisation in the ovary</p> <p><i><b>Rachel Carson</b> described the harm humans do to the environment and ourselves by using pesticides indiscriminately. It spurred a reversal in national pesticide policy, which led to a nationwide ban on DDT and other pesticides</i></p>		<p>The parts of the human skeleton work as a system for support, protection, movement and the production of new blood cells. Antagonistic pairs of muscles create movement when one contracts and the other relaxes</p> <p>Multicellular organisms are composed of cells which are organised into tissues, organs and systems to carry out life processes. There are many types of cells. Each has a different structure or feature so it can do a specific job.</p>		<p>In gas exchange, oxygen and carbon dioxide move between alveoli and the blood. Oxygen is transported to cells for aerobic respiration and carbon dioxide, a waste product of respiration, is removed from the body. Breathing occurs through the action of muscles in the ribcage and diaphragm. The amount of oxygen required by body cells determines the rate of breathing.</p> <p>The body needs a balanced diet with carbohydrates, lipids, proteins, vitamins, minerals, dietary fibre and water, for its cells' energy, growth and maintenance. Organs of the digestive system are adapted to break large food molecules into small ones which can travel in the blood to cells and are used for life processes. Iron is a mineral important for red blood cells. Calcium is a mineral needed for strong teeth and bones. Vitamins and minerals are needed in small amounts to keep the body healthy.</p>	

Year 7	Chemistry	Autumn 1 – 7 weeks	Autumn 2 – 7 weeks	Spring 1 – 6 weeks	Spring 2 – 5/6 weeks	Summer 1 – 5/6 weeks	Summer 2- & weeks
	Course topic	Chemistry: Foundations of Chemistry		Earth Structure and Rock Cycle		Chemistry: Periodic table and elements	
	Powerful/Core Knowledge  Including key people and stories	Students are introduced to the concept of atoms and elements. Students will understand the differences between Elements, compounds and mixtures. Students will build on their KS2 knowledge of states of Matter and focus on changes in states including melting, freezing, boiling, evaporation and sublimation.		Students will further their understanding of the structure and composition of the Earth. They will look at the formation and classification of Igneous, Metamorphic and Sedimentary rocks. They will look at how biological, physical and chemical weathering and erosion contribute to the rock cycle. There will be cross links to Geography and the work completed there.		Students further their knowledge of what they have learnt in the autumn term and build on it by understanding that elements in the periodic table are organised according to atomic number and the differences in properties between metals and non-metals. Compounds are formed when 2 or more elements form a chemical bond. Students will learn how to write word and symbol equations.	

Physics	Autumn 1 – 7 weeks	Autumn 2 – 7 weeks	Spring 1 – 6 weeks	Spring 2 – 5/6 weeks	Summer 1 – 5/6 weeks	Summer 2- & weeks
<b>Course topic</b>	<b>Physics: Introduction to Physics</b>		<b>Sound and Light</b>		<b>Physics Forces: Quantifying energy</b>	
<b>Powerful/Core Knowledge</b>	The universe can be thought of as an interaction between forces and energy. These are two fundamental ideas in Physics.		Students will build upon their knowledge of waves that they learnt in Introduction to physics. This unit specifically the focus will be on Sound and light waves. With Sound waves students will learn about Frequencies of sound waves, measured in hertz (Hz); echoes, reflection and absorption of sound. They will learn that sound needs a medium to travel and the speed of sound in air, in water, in solids. Sound is produced by vibrations of objects, in loud speakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal.		Energy is a quantity that is conserved - it cannot be created or destroyed. Energy can be stored and transferred. Students will learn about the following stores;	
<b>Including key people and stories</b>	This model of forces and energy can explain how change can happen. We can measure the sizes of forces and we can calculate how much change has happened.				Magnetic, kinetic, heat, electrostatic, gravitational, chemical, elastic potential, nuclear.	
	Sequence of learning: What makes things start to move? What happens when one object pushes another? Can forces happen at a distance? What is the difference between weight and mass? How can we measure weight and mass? How is work done? How is energy transferred when an object is dropped?		Students will learn about the similarities and differences between light waves and waves in matter. Light waves travelling through a vacuum; speed of light. The transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface. Students will carry out practicals looking at the use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and look at how colours can be seen.		Energy can be transferred between different stores of energy. When energy transfers take place in a system: the total energy stored before = total energy stored after. This is known as conservation of Energy. When energy is transferred within a system, energy can be dissipated. This is where energy is 'wasted' by being transferred out to the surroundings. Energy becomes stored in less useful ways. Energy is usually dissipated to the surroundings by heating, though sometimes energy is dissipated by radiation, for example by sound waves Students then look at how we use energy in our home and the different ways electricity can be generated. And how to calculate the cost of electricity.	