Curriculum Overview for Science - Year 9				
When?	**What?**	**Why?**	**How?**	**Support**
Autumn Half Term – 1	Genetics and Evolution	To look at inherited variation, DNA and natural selection.	Investigating examples of variation in nature and between people, analysing information from different resources.	BBC Bitesize Key Stage 3 Science: Biology *Evolution, Extinction and Biodiversity.* 9A Exploring Science Key knowledge sheet
	Earth and Space	To look at about the Earth's seasons, how our planet moves within the Solar System, the Earth's magnetic field, gravity and what there is beyond the planets.	Use of simulations and astronomical models, as well as video clips	BBC Bitesize Key Stage 3 Science: Astronomy and Space Science 8K Exploring Science Key knowledge sheet
	Making Materials	To look at the manufacture, properties and uses of different types of materials, as well as problems with synthetic materials.	Discussion work, group work and experiments, video clips and research.	BBC Bitesize Key Stage 3 Science: Chemistry *Ceramics, Polymers and Composites* Key knowledge sheet
Autumn Half Term – 2 And Spring Half Term – 1 **Rough guide to order of units but all units covered by end of year**	AQA 9-1 GCSE Biology topic 1- Cell Biology	Cells are the basic unit of all forms of life. Explore structural differences between types of cells enables them to perform specific functions within the organism, how cell grow and divide, specialisation in cells, stem cells and microbiology concepts, and transport of materials in cells.	Required practical: microscope, osmosis Discussions on stem cell technology	Seneca B1 GCSE Golden Box for PLC and exam questions CPG revision guides AQA 9-1 Key knowledge sheet
	AQA 9-1 GCSE Chemistry Topic 1- Atomic Structure	The periodic table provides chemists with a structured organisation of the known chemical elements from which they can make sense of their physical and chemical properties. The historical development of the periodic table and models of atomic structure provide good examples of how scientific ideas and explanations develop over time as new evidence emerges. The arrangement of elements in the modern periodic table can be explained in terms of atomic structure which provides evidence for the model of a nuclear atom with electrons in energy levels.	Chemsheets Separating techniques	Seneca C1 GCSE Golden Box for PLC and exam questions CPG revision guides AQA 9-1 Key knowledge sheet

Spring Half Term - 2	AQA 9-1 GCSE Physics - Energy	The concept of energy emerged in the 19th century. The idea was used to explain the work output of steam engines and then generalised to understand other heat engines. It also became a key tool for understanding chemical reactions and biological systems. Limits to the use of fossil fuels and global warming are critical problems for this century. Physicists and engineers are working hard to identify ways to reduce our energy usage.	Required practical – Specific Heat Capacity and Thermal Insulation Discussion on Energy resources Energy specific calculations	Seneca P1 GCSE Golden Box for PLC and exam questions CPG revision guides AQA 9-1 Key knowledge sheet
	AQA 9-1 GCSE Chemistry- Bonding Structure and Properties of Matter	Chemists use theories of structure and bonding to explain the physical and chemical properties of materials. Analysis of structures shows that atoms can be arranged in a variety of ways, some of which are molecular while others are giant structures. Theories of bonding explain how atoms are held together in these structures. Scientists use this knowledge of structure and bonding to engineer new materials with desirable properties. The properties of these materials may offer new applications in a range of different technologies.	Bonding Diagrams, Modelling, discussion on nanotechnology	Seneca C2 GCSE Golden Box for PLC and exam questions CPG revision guides AQA 9-1 Key knowledge sheet
Summer Term – 1 and 2	AQA 9-1 GCSE Biology Organisation	In this section we will learn about the human digestive system which provides the body with nutrients and the respiratory system that provides it with oxygen and removes carbon dioxide. In each case they provide dissolved materials that need to be moved quickly around the body in the blood by the circulatory system. Damage to any of these systems can be debilitating if not fatal. Although there has been huge progress in surgical techniques, especially with regard to coronary heart disease, many interventions would not be necessary if individuals reduced their risks through improved diet and lifestyle. We will also learn how the plant's transport system is dependent on environmental conditions to ensure that leaf cells are provided with the water and carbon dioxide that they need for photosynthesis.	Required Practical Enzyme reactions and Food testing, models, dissections and group activities, written tasks and demonstrations.	Seneca B2 GCSE Golden Box for PLC and exam questions CPG revision guides AQA 9-1 Key knowledge sheet

	AQA 9-1 GCSE PHYSICS – Particle Model of Matter	The particle model is widely used to predict the behaviour of solids, liquids and gases and this has many applications in everyday life. It helps us to explain a wide range of observations and engineers use these principles when designing vessels to withstand high pressures and temperatures, such as submarines and spacecraft. It also explains why it is difficult to make a good cup of tea high up a mountain!	Required practical – Density Modelling, PHet simulations	Seneca P3 GCSE Golden Box for PLC and exam questions CPG revision guides AQA 9-1 Key knowledge sheet
	End of year Exam	Covering GCSE areas of B1, B2, C1, C2 and P1, P3		Seneca, Key knowledge sheets, revision guide