Academic Learning Plan 2022-2023
Year 8 science

Intent: **Science in year 8 intends**: to build on student's enthusiasm and excitement from year 7 by strengthening their confidence in applying their knowledge to new situations and being able to transfer those skills between topics, to prepare students for year 9 and beyond to further scientific study, to develop the key content ideas for key stage 3 and to develop the key skills of working scientifically.

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 7 Units	Introductory safety unit 8A - Food and Nutrition 8E - Combustion 8J - Light	8C - Breathing and Respiration 8G - Metals and their uses 8K - Energy transfers	8D - Unicellular organisms 8H - Rocks 8L - Earth and Space	9A - Genetics and Evolution 9E - Making materials 9I - Forces and motion	9B - Plant growth 9F - Reactivity 9J - Force fields and electromagnets	Revision and projects
Content	The introductory unit covers basic lab safety and focuses on hazard symbols. Food and nutrition looks at the main components in the human diet and why they are needed. The digestive system is also covered in some detail, and the idea of enzymes introduced.	Beathing and covers gas exchange in humans and other organisms, together with details of aerobic and anaerobic respiration in humans.	Unicellular organisms takes a detailed look at what unicellular organisms are, the differences between different types, their problems and their uses.	Genetics and evolution recaps ideas about the causes of variation and then looks at inherited variation in more detail. DNA is introduced before students consider how inherited genes can affect an organism's survival. The unit ends with coverage of natural selection.	Plant Growth looks at photosynthesis and aerobic respiration in plants in more detail, and then considers plant adaptations.	The earlier modules do not necessarily fit neatly into a term so it is likely that term six will be made up of the last modules from term five. Students will then undertake some open-ended projects to develop their scientific skills.
	Combustion covers combustion and oxidation reactions, including those of hydrocarbons, metals and non-metals. The idea of an exothermic reaction is introduced. Students will also look at the pollution of the air by the products of fossil fuel combustion. There are opportunities to discuss the impact of global warming and methods for controlling carbon dioxide emissions.	Metals and their uses reviews common physical properties of metals and introduces their main chemical properties. The idea that reactions can occur at different speeds is also illustrated and this leads to the introduction of the general reactivity series of metals.	In the Rocks topic examines the different types of rock and the processes that bring about their formation, leading to the idea of a rock cycle that operates within a huge geological timescale. It also looks at the Earth as a source of resources and the advantages of recycling metals.	Making materials looks at the manufacture, properties and uses of different types of materials. The first three topics introduce examples of ceramic, polymer and composite materials. In each case, the properties of these materials are linked to their uses. The unit continues by looking at some of the problems caused by synthetic materials and possible solutions to these problems. In the last topic, the importance of recycling materials is considered.	Reactivity looks at metals through the theme of demolition. Physical changes and gas pressure are reviewed, and then the reactivity series and a chemical method of preventing rusting are covered. Exothermic and endothermic reactions are introduced, followed by displacement reactions. The method of extraction of a metal is related to its position in the reactivity series. Calculation of percentage change is related to oxidation and thermal decomposition reactions.	
	Light revises work from KS2 on light, which is then extended to consider how light travels and what happens when it meets an object	The Energy Transfers this unit looks at energy transfers by heating.	Earth and Space builds on work from KS2 on the Solar System and looks at the Earth, including the seasons and the Earth's magnetic field and gravity. It also looks at the Solar System and what is beyond the Solar System.	Forces and motion starts by revising some aspects of forces and their effects, energy stores and transfers. It then looks at calculations of speed and relative speed, and representing journeys on distance–time graphs. The final topics look at simple machines (levers, ramps and pulleys).	Force fields and electromagnets starts by revising previous work on magnetic and gravitational fields, then introduces static electricity and the idea of an electric field. Work on current electricity is revised, and then extended to look at resistance calculations.	

Literacy	Key word sheets 8A, 8E and 8J.	Key word sheets 8C, 8G and 8K	Key word sheets 8D, 8H and 8L	Key word sheets 9A, 9E, 9I	Key word sheets 9B, 9F and 9J	
Knowledge organiser	8A - Food and Nutrition 8E - Combustion 8J - Light	8C - Breathing and Respiration 8G - Metals and their uses 8K - Energy transfers	8D - Unicellular organisms 8H - Rocks 8L - Earth and Space	9A - Genetics and Evolution 9E - Making materials 9I - Forces and motion	9B - Plant growth 9F - Reactivity 9J - Force fields and electromagnets	
Assessment	There will be an assessment of these three topics once they are all completed – this is not necessarily at the end of the term.	There will be an assessment of these three topics once they are all completed – this is not necessarily at the end of the term.	There will be an assessment of these three topics once they are all completed – this is not necessarily at the end of the term.	There will be an assessment of these three topics once they are all completed – this is not necessarily at the end of the term.	There will be an assessment of these three topics once they are all completed – this is not necessarily at the end of the term.	The end of year assessment grade will be based on an average of the assessments throughout the year.
GCSE AO Link (or other) if applicable	In science the assessment objectives are: AO1 Demonstrate knowledge and understanding. AO2 Apply knowledge and understanding. AO3 Analyse information and ideas. These are all covered in each block of three modules.					
Homework	One piece of homework per week, for **up to** 45 minutes					
CEIAG- STEM careers that link to these topics	Dietician Stage lighting technician	Sports scientist Welder	Microbiologist Geologist astrophysicist	Geneticist Materials scientist Car designer	Farmer MRI technician	
Enrichment	Science club is open to all year 7 & 8 students					