Academic Learning Plan 2022-2023

Year 7 science

Intent : **Science in year 7 intends**: to build on student's enthusiasm and excitement from primary school 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 8 and beyond to further scientific study, to introduce and develop the key content ideas for key stage 3 and the key skills of working scientifically.

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 7 Units	**Introductory safety unit** **7A - Cells, Tissues, Organs and Systems** **7E - Mixtures and Separating** **7I - Energy**	**7C - Muscles and Bones** **7F - Acids and Alkalis** **7J - Current Electricity**	**7B - Sexual reproduction in animals** **7G - The Particle model** **7K - Forces**	**7D – Ecosystems** **7H - Atoms, Elements and compounds** **7L - Sound**	**8B - Plants and their reproduction** **8F - The Periodic Table** **8I - Fluids**	**Catch up time and projects**
Biology Concepts	Cells tissues and organ systems starts by reminding students about the features of organisms, and then looks at organs, tissues, and cells. These ideas are then built back up to look at organs once again, in the context of organ systems. Students are introduced microscopes.	Muscles and bones cover three important organ systems: the gas exchange system, the circulatory system, and the locomotor system. The various effects of drugs on these systems are also considered, together with their effects on the nervous system.	Sexual reproduction in animals explores sexual reproduction in animals. The central focus for learning is the human reproductive system and sexual reproduction in humans. This module has a large overlap with PSHEE and will encourage students to respect themselves and others.	Ecosystems looks at ecosystems and the factors that affect them. This includes the impact of human activity and the importance of biodiversity. This unit will encourage students to respect their environment.	Plants and their reproduction cover reproduction in plants, both sexual and asexual, although the former is of chief importance. Classification and biodiversity are also covered.	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.
Chemistry Concepts	Mixtures and separating revises and build on work from KS2 on materials, specifically on mixtures, solutions and separation techniques. This provides opportunities to introduce the methods of working in a science lab, which will differ from the science learning experience that most students will have had previously.	Acids and Alkalis looks at acids and alkalis and how they are described using a pH number. It looks at neutralisation reactions and some of their uses and introduces standard hazard symbols.	The particle model develops an understanding of the different properties of solids, liquids, and gases within the context of waste management and disposal. Scientific method and ideas on experiments, observation, hypotheses, and theories are discussed, leading to an understanding of the particle theory of matter.	Atoms, elements, and compounds expands on particle theory and explains the differences between atoms, and molecules, elements, and compounds. It looks at the symbols and formulae for elements and compounds. The involvement of chemical reactions in the formation and decomposition of compounds is also covered. It links these with the more abstract ideas of particle models, naming compounds and word equations.	The periodic table develops students' understanding of matter, atoms, and chemical and physical change. Students then look at using the trends in the periodic table to make predictions about physical and chemical properties of elements and their compounds.	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.

Physics Concepts	Energy introduces the idea that stores of energy are needed to make most things happen. It looks at food, energy stores and transfers, and energy resources in terms of non-renewable fuels an renewable energy resources.	Current Electricity looks at the measurement of current and how it behaves in series and parallel circuits, and at voltage and resistance. Various models for thinking about what is happening in circuits are explored, and the unit concludes by looking at how we use electricity safely. Building circuits will give students a sense	Forces revises the concepts of forces and their effects and extends students' knowledge of friction, gravity, and springs. These ideas are presented using a theme of outdoor sports, such as climbing and mountain biking, to link to ideas about forces, friction, and pressure.	Sound looks at how sounds are made, transmitted, and detected, some uses of sound and compares sound waves with waves on the surface of water.	Fluids looks at changes of state, and then goes on to look at fluids and some of their effects, including pressure, floating and sinking, and drag	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.
Literacy	Key words sheets 7A, 7E and 7I	Key word sheets 7C, 7F and 7J	Key word sheets 7B, 7G and 7K	Key word sheets 7D, 7H and 7L	Key word sheets 8B, 8F and 8I	
Knowledge organiser	7A - Cells, Tissues, Organs, and Systems 7E - Mixtures and Separating 7I - Energy	7C - Muscles and Bones 7F - Acids and Alkalis 7J - Current Electricity	7B - Sexual reproduction in animals 7G - The Particle model 7K - Forces	7D - Ecosystems 7H - Atoms, Elements, and compounds 7L - Sound	8B - Plants and their reproduction 8F - The Periodic Table 8I - Fluids	
Assessment	There will be a combined assessment of the 3 units completed per term once these units have been taught. This will be completed when the teacher feels the students are ready					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. Tasks to include, key word tasks, reading comprehension, quizzes and assessment questions					
CEIAG- STEM careers that link to these topics:	Microbiologist Hydrologist Analytical Chemist Nutritionist Power plant specialist	Physiotherapist Chemist Pharmacology Electrician	Vet Quantum physicist Meteorologist Mechanical Engineer	Ecologist Sound engineer	Botanist Submariner Marine Engineer	
Enrichment	Science club is open to all year 7 & 8 students					