The Science curriculum at Sunbeck Centre works to mitigate the disruption to student's science education caused by the Covid-19 lockdown and other reasons for gaps in learning.

- key steps in conceptual and skills have probably been missed by most students' due to school absence
- This effect likely to be larger for disadvantaged groups

The key to solving these gaps in knowledge and skills is to teach fundamental knowledge thoroughly, addressing individual misconceptions and teaching scientific thinking. It also relies on a level of flexibility to adapt teaching in light of prior knowledge.

- At the beginning of the topic, we spend some time mapping prior knowledge
- We use low stakes assessment as starters and through the lesson to gauge learning
- When possible, we use project-based learning to increase engagement with students
- We link topics to potential STEM careers
- There are assessment opportunities at the end of each topic

A year plan is planned in which all 3 Sciences are studied for two half terms each. This ensures that each student gets experience of a range of different topics. Within the topic the subject is taught in a practical, interactive and engaging way. Many students have disengaged from Science lessons or been banned from the practicals so there is a real emphasis on them enjoying Science and realising that they are capable of achieving in the subject.

	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Subject and topic	**Chemistry – Chemistry in our World**	**Physics – Energy, forces and the structure of matter**	**Biology -The Human Body**	**Chemistry – Elements, mixtures and compounds**	**Physics - Electricity, magnetism and waves**	**Biology -Material cycles and energy**
	The Periodic Table • Properties of different elements • the Periodic Table: periods and groups; metals and non-metals • the properties of metals and non-metals	**Energy** • Calculation of fuel cost in the home • comparing energy values of different foods (from labels) (kJ) • domestic fuel bills, fuel use and costs **Fuels and energy resources.**	**Cells and organisation** • Cells and using a microscope • How organ systems are organised and made up of cells • How muscles and the skeleton work **Nutrition and digestion**	**Atoms, elements and compounds** • a simple (Dalton) atomic model • differences between atoms, elements and compounds • chemical symbols • conservation of mass **Pure and impure substances**	**Electricity and electromagnetism** • Current electricity, potential difference, different types of circuit • Electrical conductors and insulators **Static electricity**	**Photosynthesis** • how plants use photosynthesis to store light energy • the adaptations of leaves for photosynthesis. **Cellular respiration** • aerobic and anaerobic respiration in living organisms

	Materials • the reactivity series of metals • properties of polymers **Earth and atmosphere** • the composition of the Earth • Earth as a source of limited resources and the efficacy of recycling • the production of carbon dioxide by human activity and the impact on climate	• Energy changes and transfers • Investigation of heat transferring from hot to cooler surfaces including how an insulator can work **Motion and forces** • Investigating speed and using the equation speed = distance ÷ time **Forces** • forces as pushes or pulls • using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces • forces measured in newtons • pressure in liquids; upthrust effects, floating and sinking • pressure measured by ratio of force over area **Energy in matter** • changes with temperature in motion	• What makes up a healthy diet • How the body breaks down food **Gaseous Exchange** • The structure of the lungs • The impact of exercise, asthma and smoking on how the lungs work	• pure substances, mixtures, including dissolving • diffusion • simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography **Chemical reactions** • chemical reactions • combustion, thermal decomposition, oxidation and displacement reactions • all about acids and alkalis • exothermic and endothermic chemical reactions	• How it works and showing that objects are not in contact **Magnetism** • magnetic poles attraction and repulsion and magnetic fields, • Earth's magnetism, compass and navigation **Matter** • Density in solids, liquids and gases • diffusion in liquids and gases • the difference between chemical and physical changes. **Waves** • Sound waves and what people can hear • Ultra sound waves **Light waves** • Light waves and how a rainbow is formed • the human eye	**Relationships in an ecosystem** • the interdependence of living things in an ecosystem, including food webs and insect pollinated crops • the importance of plant reproduction through insect pollination in human food security • how toxic material can build up in living things **Genetics and evolution** • Inheritance, chromosomes, DNA and genes • including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model • differences between species • the variation between individuals within a species • natural selection • how a species becomes extinct • the importance of maintaining

		and spacing of particles • internal energy stored in materials.				biodiversity and the use of gene banks
Assessment opportunities	• Ongoing teacher assessment • Low stakes questions in class • Practical investigations • End of unit assessment	• Ongoing teacher assessment • Low stakes questions in class • Practical investigations • End of unit assessment	• Ongoing teacher assessment • Low stakes questions in class • Practical investigations • End of unit assessment	• Ongoing teacher assessment • Low stakes questions in class • Practical investigations • End of unit assessment	• Ongoing teacher assessment • Low stakes questions in class • Practical investigations • End of unit assessment	• Ongoing teacher assessment • Low stakes questions in class • Practical investigations • End of unit assessment
Careers using these topics	Metallurgists Geologists Chemists	Boat builders Mechanical Engineers Builders	Nurses Doctors Dieticians	Material Scientists Water Engineers Cleaners	Electrical engineers Electricians Sound Engineers Radiographers	Geneticists Farmers Environmental Scientists Climatologists