KS3 ELC Science Year 1 Curriculum Plan 2023-2024

Term	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Component	Component 1A – Biology: The Human Body	Component 1B 1C – Biology: Health and Disease	Component 3A, 3B – Chemistry: Elements, Compounds and Mixtures Chemistry: States of Matter	Component 3C 5A – Chemistry: Particles and Properties of Matter Physics: Energy	Component 5B 5C – Physics: Forces and Motion Physics: Atoms and Nuclear Radiation	Component 6 – Physics: Electricity Physics: magnetism, electromagnetism and waves
Learning Outcomes	*1A: Students will learn what are the building blocks for a living organism and how organs systems work together to form an organism* Topics: **Cells** The similarities and differences in plant and animal cells The organelles of cells How a cells structure makes it appropriate for its function **Tissues and Organs** How cells make tissues The organisation of tissues to make organs The main organ systems of the human body The different parts of the human respiratory system How the different organs work together in the digestive system	*1B: Students will learn the process of respiration, how lifestyle can have an effect on health and how pathogens cause disease* Topics: **Respiration** Identify the respiration equation Explain how glucose is related to diet **Lifestyle and Exercise** Describe how lifestyle can effect human health, including smoking to cancer, alcohol to liver. Define a balanced diet and relate to energy **Communicable Disease** Identify how pathogens cause disease Describe preventions to disease Identify the drugs required to treat disease and how they are developed *1C: Students will learn how the human body is coordinated through hormones* Topic: **Body Coordination**	*3A: Students will learn how elements make up all substances, combine in compounds to make substances with different properties* Topics: **Elements** Describe what is meant by an atom and relate to an element, state the use of the periodic table **Compounds** Describe the difference between a mixture and a compound State how compounds are formed Write a word equation for the formation of a compound *3B: Students will learn how the structure of a material effects its property, how to separate mixtures* Topics: **States of Matter** Describe the three states of matter and use the particle model of matter to explain the three states Explain the energy and change in particle arrangement when a change in state occurs	*3C: Students will learn how the properties of materials makes them suitable for their function and how to how we can make material for different uses* Topics: **Metals and Alloys** Describe the properties of metals and their uses State why we should recycle metals **Polymers** Describe the structure of a polymer Identify the uses of some common polymers and why they are an environmental problem. *5A: Students will learn what is meant by energy, how it is generated and how it is transferred.* Topics: **Energy Stores and Pathways** State energy stores and the pathways for energy transfer **Energy Resources** Describe the main energy resources, identifying both	*5B: Students will learn the forces involved in motion, carrying out force equations* Topics: **Forces of Motion** Describe a push and pull force on making an object move Calculate speed, distance and time **Stopping Distances** Apply forces to the stopping distance of a car, including factors which effect the distance *5C: Students will learn how radiation is formed, identifying the different types of radiation* Topics: **Nuclear Radiation** State what is ionising radiation Identify the three types of radiation and state the properties of each Describe the uses and dangers of radiation	6: students will learn rules of electrical circuits, series and parallel and resistance , as well as magnetism, poles, electromagnetism and how to read transverse and longitudinal waves. Topics: **Electricity** What is electrical flow, what are series and parallel circuits. How to use an ammeter and voltmeter, how to determine resistance of a wire. Topics: **Magnetism/electromagnetism** What are magnetic materials, magnets and electromagnets, the poles, how to create a solenoid, how to draw field lines Topics: **Waves** Transverse and longitudinal waves, frequency, wavelength, amplitude, wavenumber calculations. Sound waves vs light waves

		Describe automated nervous system and reflex actions Identify a hormone and its function in the menstrual cycle, how it is used in fertility	**Separating Mixtures** State what a mixture is Identify the common ways to separate a mixture Apply chromatography to separating material	renewable and non-renewable		
Required Practical Activities	**Microscopes** Cell model building project Heart and lung dissection Building mini lungs Gums to bums **Starch and Amylase**	**Energy in food** **Exercise on pulse rate** Classroom plates of microorganisms **Effect of disinfectant on bacteria** **Effect of caffeine on reaction times** **Reflex reaction times**	Alkali metals reactivity **Hydrogen production with acid/metals** **Comparing melting points** **Filtration/Evaporation of different mixtures** **Chromatography**	**Compare properties of different metals** **Biodegradability of different polymers and materials** **Factors effecting cooling of an object** **Thermal conductivity of different materials** **Friction of different materials**	**Speed of a trolley as it rolls down a slope** **Reaction time with distraction** Coin flip radioactivity 3D model of types of radiation	**Series and parallel circuit creation** **Resistance of a wire investigation** **n**
Assessment	In class written assessment on outcomes of Cells topic, to be completed and marked before data submission. Any TDA that may have been complete can be used to judge progress	TDA and ESA for component 1, to be complete and marked by the data submission. Any of the highlighted practical's can be used as TDA	In class assessment on outcomes of Elements and Compounds topics, to be completed and marked before data submission. Any TDA completed can be used to judge progress.	TDA and ESA for component 3, to be complete and marked by the data submission. Any of the highlighted practical's can be used as TDA	TDA and ESA for component 5, to be complete and marked by the data submission, deadline for ELC 13.05.2020.. Any of the highlighted practical's can be used as TDA	TDA and ESA for component 6, to be complete and marked by the data submission (but delivered AFTER deadline, so component 6 content not to be used for TDA, just ESA.
Enrichment	Forensic outreach or Francis crick for microscopy and microbiology culturing	Francis crick for microbiology culturing Testing caffeine levels in local coffee shops	SMARTEST ENERGY hydrogen production drop-in session	Visit to recycling factory	Pure Planet Recycling or British plastics Federation	