SCIENCE Y9- CURRICULUM PLANNING SEQUENCE

Subject	Year	Term	Big Idea	Topic	Teacher 1 Subject Learning Checklist	Trilogy RP
Combined Science Trilogy	Year 9	Term 1 -28hrs	4.1 Cell Biology	4.1.1 Cell structure	4.1.1.1 Eukaryotes and prokaryotes 4.1.1.2 Animal and plant cells 4.1.1.3 Cell specialisation 4.1.1.4 Cell differentiation 4.1.1.5 Microscopy	RP1
				4.1.2 Cell division	4.1.2.1 Chromosomes 4.1.2.2 Mitosis and the cell cycle 4.1.2.3 Stem cells	
				4.1.3 Transport in cells	4.1.3.1 Diffusion 4.1.3.2 Osmosis 4.1.3.3 Active transport	RP2
			4.2 Organisation	4.2.1 Principles of organisation	4.2.1 Principles of organisation	
				4.2.2 Animal tissues, organs and organ systems	4.2.2.1 The human digestive system	RP3 & 4
			4.1	4.1.1 A simple model of the atom, symbols, relative atomic mass,	4.1.1.1 Atoms, elements and compounds 4.1.1.2 Mixtures	
			4.8 Chemical analysis	4.8.1 Purity, formulations and chromatography	4.8.1.1 Pure substances 4.8.1.2 Formulations 4.8.1.3 Chromatography	RP12
		Term 2 -28hrs	4.1 Atomic Structure and the periodic table	4.1.1 A simple model of the atom, symbols, relative atomic mass, electronic charge and isotopes	4.1.1.3 The development of the model of the atom 4.1.1.4 Relative electrical charges of subatomic particles 4.1.1.5 Size and mass of atoms 4.1.1.6 Relative atomic mass 4.1.1.7 Electronic structure	
				4.1.2 The periodic table	4.1.2.1 The periodic table 4.1.2.2 Development of the periodic table 4.1.2.3 Metals and non-metals 4.1.2.4 Group 0 4.1.2.5 Group 1 4.1.2.6 Group 7	
			4.2 Bonding, structure and the properties of matter	4.2.1 Chemical bonds, ionic, covalent and metallic	4.2.1.1 Chemical bonds 4.2.1.2 Ionic bonding 4.2.1.3 Ionic compounds 4.2.1.4 Covalent bonding 4.2.1.5 Metallic bonding	
				4.2.2 How bonding and structure are related to the properties of	4.2.2.1 The three states of matter 4.2.2.2 State symbols	
		Term 3 - 24hrs	4.7 Organic chemistry	4.7.1 Carbon compounds as fuels and feedstock	4.7.1.1 Crude oil, hydrocarbons and alkanes 4.7.1.2 Fractional distillation and petrochemicals 4.7.1.3 Properties of hydrocarbons 4.7.1.4 Cracking and alkenes	
			4.10 Using resources	4.10.1 Using the Earth's resources and obtaining potable water	4.10.1.1 Using the Earth's resources and sustainable development 4.10.1.2 Potable water 4.10.1.3 Waster water treatment	RP13
				4.10.2 Life cycle assessment and recycling	4.10.2.1 Life cycle assessment 4.10.2.2 Ways of reducing the use of resources	

Big picture	Topic	Teacher 2 Subject Learning Checklist	Trilogy RP
4.7 Ecology	4.7.1 Adaptations, interdependence and competition	4.7.1.1 Communities 4.7.1.2 Abiotic factors 4.7.1.3 Biotic factors 4.7.1.4 Adaptations	RP7
	4.7.2 Organisation of an ecosystem	4.7.2.1 Levels of organisation 4.7.2.2 How materials are cycled	
	4.7.3 Biodiversity and the effect of human interaction on ecosystems	4.7.3.1 Biodiversity 4.7.3.2 Waste management 4.7.3.3 Land use 4.7.3.4 Deforestation 4.7.3.5 Global warming 4.7.3.6 Maintaining biodiversity	
4.2 Organisation	4.2.2 Animal tissues, organs and organ systems	4.2.2.2 The heart and blood vessels 4.2.2.3 Blood 4.2.2.4 Coronary heart disease: a non-communicable disease 4.2.2.5 Health issues 4.2.2.6 The effect of lifestyle on some non-communicable diseases 4.2.2.7 Cancer	
4.1 Energy	4.1.1 Energy changes in a systme, and the ways energy is stored before and after these changes	4.1.1.1 Energy stores and systems 4.1.1.2 Changes in energy 4.1.1.3 Energy changes in systems 4.1.1.4 Power	
	4.1.2 Conservation and dissipation of energy	4.1.2.1 Energy transfers in a system 4.1.2.2 Efficiency	
	4.1.3 National and global energy resources	4.1.3 National and global energy resources	
4.3 Particle model of matter	4.3.1 Changes of state and the particle model	4.3.1.1 Density of materials 4.3.1.2 Changes of state	
	4.3.2 Internal energy and energy transfers	4.3.2.1 Internal energy 4.3.2.2 Temperature changes in a system and specific heat capacity 4.3.2.3 Changes of heat and specific latent heat	
	4.3.3 Particle model and pressure	4.3.3.1 Particle motion in gases	
4.4 Atomic structure	4.4.1 Atoms and isotopes	4.4.1.1 The structure of an atom 4.4.1.2 Mass number, atomic number and isotopes 4.4.1.3 The development of the modle of the atom	
	4.4.2 Atoms and nuclear radiation	4.4.2.1 Radioactive decay and nuclear radiation 4.4.2.2 Nuclear equations 4.4.2.3 Half lives and the random nature of radioactive decay 4.4.2.4 Radioactive contamination	
4.2 Electricity	4.2.1 Current, potential difference and resistance	4.2.1.1 Standard circuit diagram symbols 4.2.1.2 Electrical charge and current 4.2.1.3 Current, resistance and potental difference 4.2.1.4 Resistors	
	4.2.2 Series and parallel circuits	4.2.2 Series and parallel circuits	
	4.2.3 Domestic uses and safety	4.2.3.1 Direct and alternating potential differences 4.2.3.2 Mains electricity	
	4.2.4 Energy transfers	4.2.4.1 Power 4.2.4.2 Energy transfers in everyday appliances 4.2.4.3 The National Grid	

Biology	Required practical activity 1:	Use a light microscope to observe, draw and label a selection of plant and animal cells. A magnification scale must be included.
	Required practical activity 2:	Investigate the effect of a range of concentrations of salt or sugar solutions on the mass of plant tissue.
	Required practical activity 3:	Use qualitative reagents to test for a range of carbohydrates, lipids and proteins.
	Required practical activity 4: .	Investigate the effect of pH on the rate of reaction of amylase enzyme
Chemistry	Required practical activity 12:	Investigate how paper chromatography can be used to separate and tell the difference between coloured substances. Students should calculate Rf values.
	Required practical activity 13:	Analysis and purification of water samples from different sources, including pH, dissolved solids and distillation.

Biology	Required practical activity 7:	Measure the population size of a common species in a habitat. Use sampling techniques to Investigate the effect of a factor on the distribution of this species.
Physics	Required practical activity 14:	An investigation to determine the specific heat capacity of one or more materials. The investigation will involve linking the decrease of one energy store (or work done) to the increase in temperature and subsequent increase in thermal energy stored.
	Required practical activity 15:	Use circuit diagrams to set up and check appropriate circuits to investigate the factors affecting the resistance of electrical circuits. This should include: • the length of a wire at constant temperature • combinations of resistors in series and parallel.
	Required practical activity 16:	Use circuit diagrams to construct appropriate circuits to investigate the I–V characteristics of a variety of circuit elements, including a filament lamp, a diode and a resistor at constant temperature.
	Required practical activity 17:	Use appropriate apparatus to make and record the measurements needed to determine the densities of regular and irregular solid objects and liquids. Volume should be determined from the dimensions of