Key Stage 4 – Science – Curriculum grid

Science	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Pathway 1 AQA UAS	**117118 - The human body** -Parts of the body (internal and external) -Body functions -Effects of exercise - Mental health and wellbeing -Healthy foods **Investigation:** Using senses to taste a range of healthy foods. Exercising and recording breathing rates. **115340 – Human reproduction** -Adults and offspring -Human lifecycle -Male / Female reproductive system -How babies are conceived	**115343 – Properties of material** -Identify a range of materials -Materials objects are made from -Magnetic and non-magnetic -Insulators -Conductivity of materials **Investigation:** Using magnets explore different materials. Discover which insulators are best at keeping water hot. **114511 – Chemistry in our world** -Transfer of energy (heat) -Chemical reactions -Reactions which transfer cold -Yeast reactions -Renewable energy resources **Investigation:** Inflating balloons with yeast.	**115348 – Magnets** -Grouping materials -Uses of a magnet -Making a magnet -Making an electromagnet -Using a compass **Investigation:** Creating an electromagnet to collect paperclips. **114525 - Energy, forces and the structure of matter** -Energy outputs -Physical change -Forces on the body -Pushing/ pulling -Magnetic force **Investigation:** Discovering forces on the human body e.g. spinning on a roundabout, gravity on a seesaw etc.	**114507 - Environment, evolution and inheritance** -Parts of a plant -Potting a plant -Plant survival -Food chains **Investigation:** Exploring a range of plants parts by dissecting. Potting a range of plants with the right conditions. **115341 – Animal classification** -Animal, plant or fungi -Mammals -Birds -Reptiles -Fish	**115349 – Light and the electromagnetic spectrum** -Light sources -Transparent and opaque -X –rays -Sun safety -Light spectrum **Investigation:** Discovering a range of light sources. **115350 – Sound and hearing** -Hearing ranges -Ear health -Making sounds -Measuring volume -Pitches **Investigation:** Discovering a range of auditory ranges. Using the sound meter to record decibels.	**115345 – Hazards, acids and alkalis** -Symbols and meaning -Household chemicals -Testing chemicals -pH indicator -Neutralisation **Investigation:** Testing a range if pH levels with litmus paper and an electronic pH reader. **115346 – Reactions** -Material burning -Reacting metals with acid. -Rusting. -House fire safety -Treating burns **Investigation:** Observing a range of metals reacting with acids.

KS4 Pathway 1/2/3 AQA ELC	**Component 1 –** The Human body -Cells -Levels of organisation -Respiration -Vaccination and medication -Diseases and viruses -Hormones and menstrual cycle -Fertility -Healthy diet and lifestyle **Investigations:** -Preparing and observing cells under a microscope in different magnifications. -Preparing a healthy meal given a range of different healthy and unhealthy choices. -Testing a range of biscuits and crisps to observe and record which release the most energy. -Test the presence of carbon dioxide	**Component 6 -** Electricity, magnetism and waves -Electrical current -Electrical circuits -Domestic electricity -Wave and properties -Electromagnetic waves -Resistance -Magnetic forces **Investigations:** -Creating series and parallel circuits using: buzzers, motors, bulbs, switches, batteries/cells. -Using ammeter and voltmeters to test current and voltage. -Investigate which materials are good conductors of electricity. -Discover how to wire a plug. -Investigate how much energy is being used by different electrical appliances. -Investigate how changing the frequency or amplitude of a wave changes the shape of the wave.	**Component 4 -** Chemistry in our world -Fossil fuels -Pollution -pH scale -Acids and metals -Neutralisation -Reactions -The atmosphere -Water **Investigations:** -Explore how much alkali is needed to neutralise an acid. -Investigate a range of acids and carbonates. -Investigate the pH of a range of substances and chemicals. -Explore underwater plants and collect the gas produced. -Testing a range of water to identify which is the safest for drinking.
KS4 Pathway 3 AQA Combined Science Trilogy	**Biology** -Cell biology -Organisation -Infection and response -Bioenergetics **Investigations:** -Investigate how the presence of an acid affects the ability of amylase to break down starch. -Investigate how temperature affects enzymes.	**Physics** -Energy -Electricity - Particle model of matter - Atomic structure **Investigations:** -Investigating the resistance in a wire. -Investigating the resistance of different components. -Discover the magnetic field around a current-carrying wire.	**Chemistry** -The rate and extent of chemical change - Organic chemistry - Chemical analysis - Chemistry of the atmosphere - Using resources **Investigations:** -Investigate the effect of changing concentration on the rate of reaction. -Testing for alkenes.
KS4 Pathway 2/3	**Component 2-** Environment, evolution and inheritance -Food chains and webs -Competition -Evolution and natural selection -Genetic material -Adaption -Environment -Photosynthesis -Carbon cycle	**Component 3 -** Elements, mixtures and compounds -Pure substances and concentration -Metals and alloys -Electrolysis -Mixtures -States of matter -Atoms and electrons -Structures of carbon -Periodic table	**Component 5 -** Energy, forces and the structure of matter -Forces -Speed and breaking distance -Weight -Transfer, conservation and stores -Atoms and radiation -Radioactive contamination

	Investigations: -Investigate how quickly food goes mouldy in a range of different temperatures. -Investigating the effect of light intensity on the rate of photosynthesis. -Investigate how seeds grow when planted close together or far apart. -Investigate how well plants grow in different concentrations of hydrochloric acid. -Extract the DNA from a kiwi fruit. -Investigating the temperature of compost.	-Reactivity series **Investigations:** -Investigate how different metals react with hydrochloric acid. -Investigate the melting point of different substances. -Investigate how the particle size affects the quickness of filtration. -To explore chromatography. -Test a range of metals to discover the melting points, boiling points and density.	**Investigations:** -Investigate the way that devices use regular transfer of energy. -Investigate the factors that affect the rate of cooling down a container of hot water. -Investigate how forces act on objects in the classroom. -Investigate how different surfaces affect the amount of friction acting on a moving block. -Investigate how the speed of a moving trolley changes as it rolls down a slope. -Investigate how talking to someone affects your reaction time.
KS4 Pathway 3 AQA Combined Science Trilogy	**Biology** -Homeostasis and response -Inheritance - Variation and evolution - Ecology	**Chemistry** -Atomic structure -Bonding, structure, and the properties of -matter - Quantitative chemistry -Chemical changes - Energy changes **Investigations:** -Investigate displacement reactions. -Investigate how the boiling point of salty water is different to the boiling point of pure water. -Investigating the electrolysis of aqueous solutions.	**Physics** -Forces -Waves -Magnetism -Electromagnetism **Investigations:** -Explore how weight will change on different planets of the Solar System. -Investigate stretching and elasticity.