Science curriculum map: Year 1-11.

|	Ecosystems	Organisms	Genes	Earth	Reactions	Matter	Electromagnetism	Forces	Energy	Waves	Contextualised skills
Year 1	Carnivores, herbivores and omnivores. Vertebrates Identify plants and their parts	Identify common animals. Parts of the body.		Seasonal changes		Everyday materials and their properties					
Year 2	Living, dead and non-living. Habitats Simple food chains Plants from seeds and bulbs	Animals have offspring. Basic needs of animals & humans				Uses of everyday materials					
Year 3	Flowering plants	Nutrition Skeletons and muscles		Rocks and soil				Magnets Friction		Light and shadows	Modelling rock and fossil formation
Year 4	Environmental change Food chains Classification - keys – types of vertebrates (mammals, birds, fish, amphibians, reptiles)	Teeth and digestion				Changing states Water cycle	Simple electric circuits		Changing states - Heat energy	Sound and vibrations, pitch and volume	Creating and using classification keys
Year 5	Plant reproduction - sexual and asexual		Life cycles	Earth, sun and moon	Reversible and irreversible reactions Separating materials	Properties and uses of materials		Gravity Air and water resistance	Mechanical energy - Simple machines		Using very large numbers - space
Year 6	Classification - Linnaeus - including microorganisms Variation	Heart and circulation -	Evolution and adaptation				Changing circuits, circuit diagrams		Electrical circuits - Electrical energy	Light and reflections	Using very small and very large numbers - microorganisms
Year 7	Plant reproduction	Cells Movement	Animal reproduction	Universe	Acids and alkalis	Particle model	Current	Speed Gravity	Energy Transfers		Risk assessing Modelling

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	Interdependence		Variation	Earth structure	Metals and non-metals	Separating mixtures	Potential difference and resistance				Using and rearranging equations
Year 8	Respiration Photosynthesis	Breathing Digestion-physical	Evolution Inheritance	Climate Earth's resources	Chemical energy Types of reactions	Elements Periodic table	Magnetism Electromagnets	Contact forces Pressure	Heating and cooling	Sound Light	Drawing accurate scientific diagrams Equations
Year 9	Levels of organisation Adaptations Competition	Cell Biology Transport in cells Digestion-chemical Circulatory system Non-communicable diseases	Cell division-mitosis Stem cells	Early atmosphere Sustainable development Potable water Waste water treatment	Reactivity series Metal and oxygen Exothermic and endothermic Testing for gases Change in mass Explanation of the reactivity of Group 1, 7 and 0 (including properties) Conservation of mass	Atomic structure Development of the model of the atom Relative atomic mass Periodic table Metals and non-metals Separating mixtures (explaining how it works) Relative formula mass States of matter Pure substances and formulations Chromatography	Alternating current Cables and plugs Generating electricity using renewable energy resources Series and Parallel circuits	F=ma Terminal velocity Speed-distance and time graphs V-T graphs Forces between objects	Energy costs Renewables Efficiency Power and energy (E =Pt) Conduction, radiation, insulating buildings	Thermal/IR radiation	Uncertainty Balancing equations Orders of magnitude Calculating magnification
Year 10	Bioenergetics Classification Distribution of organisms	Infection and response Homeostasis		Greenhouse gases Life cycle assessments recycling	Extraction of metals (including alternatives) Oxidation and reduction Reactions of acids Electrolysis Energy changes in reactions Rate of reaction Carbon compounds as fuel and feedstock	Transition metals Chemical bonding Structure and properties	PD Component characteristics Electrical power Appliances	Gas pressure and volume Gas pressure and temperature	Work done Radioactivity, nuclear energy – fission, fusion, nuclear issues Energy stores, energy transfers, GPE + KE Internal energy SLH, SHC	Wave properties Wave effects EM spectrum uses, properties, Reflection, refraction	Amount of substance Balancing equations Conversion of units (reaction time)

Science curriculum map: Year 1-11.

					Identification of ions						
Year 11	Material cycling Biodiversity Maintaining biodiversity		Cell division-meiosis Sexual and asexual reproduction Genetic inheritance and disorders Genetic engineering Selective breeding Evolution and extinction	Atmospheric pollutants	Reactions of acids Titrations Strong and weak acids Electrolysis Half equations Chemical and fuel cells Reversible reactions Carbon compounds as fuel and feedstock Reactions of alkenes and alcohols Polymers Using materials The Haber Process	Structure and bonding of carbon Nanoparticles	Magnetic fields, motor effect, generating magnetic fields via currents	Stopping distance, Momentum Scalars and vectors, resultant forces, centre of mass, parallelogram of forces			Yield and atom economy Using models to represent genetics

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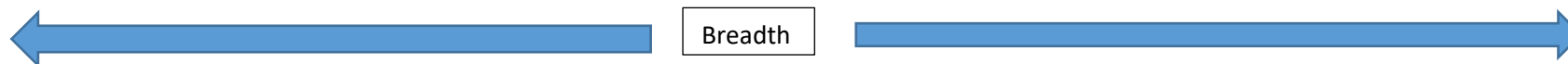
Enquiry process	Skill(s)	Implementation	Development and embedding
1	Asking scientific questions	KS1: asking simple questions and recognising that they can be answered in different ways. LKS2: asking relevant questions and using different types of scientific enquiries to answer them	KS3 and 4
2	Planning investigations	KS1: performing simple tests	KS3 and 4

		LKS2; setting up simple practical enquiries, comparative and fair tests. UKS2: planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	
3	Collecting, recording and processing data	Ks1: observing closely, using simple equipment, gathering and recording data to help in answering questions LKS2: making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables UKS2: taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	KS3 and 4
4	Analysing patterns in data	KS1: identifying and classifying LKS2: identifying differences, similarities or changes related to simple scientific ideas and processes	UKS2-KS4
5	Evaluating data and methods	UKS2: discussing how data can be trusted and if improvements can be made to methods.	KS3 and 4
6	Answering questions	Ks1: using observations and ideas to suggest answers to questions LKS2: using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions UKS2: using test results to make predictions to set up further comparative and fair tests.	KS3 and 4
7	Advanced analysis and evaluation	KS3: Looking for specific patterns in data. Linking changes to dependent and independent variables to data. Referring to examples of data as evidence in analysis tasks. Evaluating both methods and data in terms of improving results and their validity and reproducibility.	KS4

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8	Communication	LKS2: reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. UKS2: reporting and presenting findings from enquiries including conclusions causal relationships and explain actions of and degree of trust in results, in oral and written forms such as displays and other presentations.	KS3 and 4
9	Evidence and sources	LKS2 Using straightforward scientific evidence to answer questions or to support their findings. UKS2: identifying scientific evidence that has been used to support or refute ideas or arguments.	KS3 and 4
10	Critiquing claims and justifying opinions	KS3:	KS4
11	Risks and benefits	KS3: ethical/moral/physical/emotional/social risks of new technologies and advancements	KS4
12	Reviewing theories	KS3:	KS4