






Curriculum Content Map

Subject: Science

Year group: 9

	Term 1				Term 2				Term 3		
Unit title & description	Energy Transfers	Earth and Space	Breathing and Respiration	Unicellular Organisms	Making materials	Reactivity	Forces and Motion	Force Fields and Electromagnets	Genetics and evolution	Plant Growth	Key Concepts in Biology
Sequencing – Why is this taught and now?	<ul style="list-style-type: none"> Link and development of energy topic from year 7. Developing life skills such as energy consumption and bills Understanding personal impact on the world as a whole. 	<ul style="list-style-type: none"> Link to year 5 NC Science Developing life skills such as appreciating how societal perception can change over time and the reasoning behind this. 	<ul style="list-style-type: none"> Link to year 7 organs, year 8 muscles and builds on KS2 NC of understanding your own body Developing awareness and understanding of own health and fitness 	<ul style="list-style-type: none"> Links to year 7 cells, classification from year 4 NC Developing knowledge of the importance of microorganisms in the natural world and industry 	<ul style="list-style-type: none"> Links to year 7 mixtures and compounds, year 8 metals, year 5 NC. Developing understanding of properties of materials and linking these to their uses Understand both why we recycle and why some materials can and some can't be recycled 	<ul style="list-style-type: none"> Links to year 7 acids and alkalis, year 8 combustion, year 5 NC. Understand importance of metal recycling vs extraction Develop awareness of chemical reactions in everyday life that many may not be aware of 	<ul style="list-style-type: none"> Links to year 8 forces, year 5 and 6 NC. Develop understanding construction and preservation of structures Further develop mathematical skills within Science 	<ul style="list-style-type: none"> Links to year 8 forces, year 7 electricity, year 4 and 6 NC Develop awareness of health and safety around electrical devices Understanding of how many electrical devices work 	<ul style="list-style-type: none"> Links to year 7 and 8 reproduction, year 5 and 6 NC Develop awareness of personal impact on biodiversity and the environment 	<ul style="list-style-type: none"> Links to year 8 ecosystems and plants, year 5 NC Develop ideas about where food comes from and factors that can affect this. 	<p>As an introduction to GCSE. It revisits part of the cell and enzymes and expands on this. The unit include 3 core practicals giving intensive practice of writing methods, carrying out experiments and evaluating results.</p>
Knowledge 	<ul style="list-style-type: none"> Temperature changes Transferring energy Controlling transfers Power and efficiency Paying for energy 	<ul style="list-style-type: none"> Changing ideas Seasons Magnetic Earth Gravity in space Beyond the Solar System 	<ul style="list-style-type: none"> Aerobic respiration Gas exchange system Getting oxygen Comparing gas exchange Anaerobic respiration 	<ul style="list-style-type: none"> Unicellular or multicellular Bacteria Protoctists Decomposers and carbon 	<ul style="list-style-type: none"> About Ceramics Polymers Composite materials Problems with materials Recycling materials 	<ul style="list-style-type: none"> Types of explosion Reactivity Energy and reactions Displacement Extracting metals 	<ul style="list-style-type: none"> Forces and movement Energy for movement Speed Turning forces Ramps and pulleys 	<ul style="list-style-type: none"> Force fields Static electricity Current electricity Resistance Electromagnets 	<ul style="list-style-type: none"> Environmental variation Inherited variation DNA Genes and extinction Natural selection 	<ul style="list-style-type: none"> Reactions in plants Plant adaptations Plant products Growing crops Farming problems 	<p>Microscopes Plant and Animal Cells Specialised Cells Bacteria Enzymes and nutrition Enzymes Action and Activity Transporting Substances: Diffusion, Osmosis and Active Transport</p>
Skills 	<ul style="list-style-type: none"> Evaluating energy efficient light bulbs Drawing Sankey diagrams 	<ul style="list-style-type: none"> Making a scientific argument Drawing magnetic fields 	<ul style="list-style-type: none"> Writing word equations Interpreting experimental data Evaluating exchange systems 	<ul style="list-style-type: none"> Classification Comparing orders of magnitude Using flow charts to identify organisms Drawing pyramids of biomass Drawing food chains 	<ul style="list-style-type: none"> Evaluating properties of materials Selecting the correct material for the use Relating structure to properties Writing word and symbol 	<ul style="list-style-type: none"> Identifying physical and chemical changes Writing word and symbol equations Comparing reactivity of metals 	<ul style="list-style-type: none"> Drawing graphs Identifying energy transfers Explaining how forces affect the way objects move Considering relative speed 	<ul style="list-style-type: none"> Drawing magnetic fields Building electrical circuits 	<ul style="list-style-type: none"> Analysing different scientist's contributions to the discovery of DNA Classification 	<ul style="list-style-type: none"> Writing chemical equations Bias and Validity 	<ul style="list-style-type: none"> Extended writing: Explain the importance of enzymes as biological catalysts Writing methods for the above core practicals

Retrieval practice – prior knowledge tests and skills that are revisited	<ul style="list-style-type: none"> Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	<ul style="list-style-type: none"> Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	<ul style="list-style-type: none"> Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	<ul style="list-style-type: none"> Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	<ul style="list-style-type: none"> Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	<ul style="list-style-type: none"> Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	<ul style="list-style-type: none"> Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	<ul style="list-style-type: none"> Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	<ul style="list-style-type: none"> Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	<ul style="list-style-type: none"> Knowledge tests Quick quizzes DO Now recall tasks 3 part homework 	<ul style="list-style-type: none"> Knowledge tests Quick quizzes DO Now recall tasks 3 part homework
Literacy 	<ul style="list-style-type: none"> Key vocabulary including use of tier 2 language. Extended answer questions relating to payback time and efficiency for energy saving measures 	<ul style="list-style-type: none"> Key vocabulary including use of tier 2 language. Extended answer questions relating to how ideas about the Solar system and Universe have changed over time 	<ul style="list-style-type: none"> Key vocabulary including use of tier 2 language. Extended answer questions relating to different types of respiration Showing cause and effect in sentences 	<ul style="list-style-type: none"> Key vocabulary including use of tier 2 language. Extended answer questions relating to classification of organisms Using modal verbs to show degrees of creativity 	<ul style="list-style-type: none"> Key vocabulary including use of tier 2 language. Extended answer questions relating to uses and recycling Recognising biased language 	<ul style="list-style-type: none"> Key vocabulary including use of tier 2 language. Extended answer questions relating to displacement reactions and reactivity Use of passive language to write experimental methods 	<ul style="list-style-type: none"> Key vocabulary including use of tier 2 language. Extended answer questions relating to motion-time graphs How writing is suited to purpose 	<ul style="list-style-type: none"> Key vocabulary including use of tier 2 language. Extended answer questions relating to electromagnets Writing cohesive text 	<ul style="list-style-type: none"> Key vocabulary including use of tier 2 language. Extended answer questions relating to natural selection Making convincing arguments 	<ul style="list-style-type: none"> Key vocabulary including use of tier 2 language. Extended answer questions relating to selective breeding Emphasising points clearly 	<ul style="list-style-type: none"> Transferable skills enable young people to face the demands of further and higher education, as well as the demands of the workplace.
Numeracy 	<ul style="list-style-type: none"> Calculating efficiency Accuracy and precision Calculating payback time 	<ul style="list-style-type: none"> Calculating weight Making comparisons between gravity on and diameter of different planets 	<ul style="list-style-type: none"> Calculating means and ranges Comparing inhaled and exhaled air Analysing graphs of oxygen consumption and pulse rate 	<ul style="list-style-type: none"> Interpreting growth curves Use and utility of pie charts 	<ul style="list-style-type: none"> Analysing graphs of fossil fuel reserves 	<ul style="list-style-type: none"> Calculating the percentage loss or gain in mass in a reaction 	<ul style="list-style-type: none"> Calculating speed, turning forces, work Drawing and interpreting distance-time graphs 	<ul style="list-style-type: none"> Calculating resistance Rounding numbers: Decimal places and significant figures 	<ul style="list-style-type: none"> Analysing graphs Probability and Statistics 	<ul style="list-style-type: none"> Analysing graphs 	<ul style="list-style-type: none"> Demonstrate an understanding of number, size and scale and the quantitative relationship between units. Plot, draw and interpret appropriate graphs. Translate information between numerical and graphical forms. Calculate arithmetic means. Carry out rate calculations.
Enrichment learning 	<ul style="list-style-type: none"> Practical opportunities, which includes working in groups Investigation or project work into Living in Extremes – looking at how people live in different climates 	<ul style="list-style-type: none"> Practical opportunities, which includes working in groups Investigation or project work into Exploring how ideas about Space have changed over time Life beyond the solar system 	<ul style="list-style-type: none"> Practical opportunities, which includes working in groups Investigation or project work into How breathing affects athletic performance Impact of training on the body's systems 	<ul style="list-style-type: none"> Practical opportunities, which includes working in groups Investigation or project work into Links to history – the Black Death: how do we know what caused it? Manufacture of yoghurt and cheese 	<ul style="list-style-type: none"> Practical opportunities, which includes working in groups Investigation or project work into Examining materials of the future: carbon nanotubes, aerogels Exploring unforeseen problems 	<ul style="list-style-type: none"> Practical opportunities, which includes working in groups Investigation or project work into Controlled explosions: safety implications Effects of uncontrolled explosions 	<ul style="list-style-type: none"> Practical opportunities, which includes working in groups Investigation or project work into How Stonehenge was built Explaining which transport ideas did not last 	<ul style="list-style-type: none"> Practical opportunities, which includes working in groups Investigation or project work into Mission to Mars Considering the risks of space flight 	<ul style="list-style-type: none"> Practical opportunities, which includes working in groups Investigation or project work into Monsters and myth How Darwin discovered evolution Can we bring extinct animals back to life? 	<ul style="list-style-type: none"> Practical opportunities, which includes working in groups Investigation or project work into The Economics of Organic Farming Problems of farming Comparing organic and 	<ul style="list-style-type: none"> Practical opportunities, which includes working in groups Critical thinking – definitions of critical thinking are broad and usually involve general cognitive skills such as analysing, synthesising

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