

Curriculum sequencing overview: Science May 2021 (SSm)

	Autumn	Autumn 2	Spring 1	Spring 1	Summer 1	Summer 2	units
Y5	Solids liquids gases Dissolving	Earth Sun and Moon	Earth, Sun and Moon Forces	Plants Life Cycles	Plants Life Cycles	Reversible/irreversible change	7
	Earth Sun and Moon						
Scientific method Using a range of equipment to measuring with accuracy, precision and skill Introduction to repeat measurements and calculating averages Graphing skills (drawing bar charts, introduction to drawing line graphs, interpreting line graphs) Beginning to identify errors and suggest improvements (checking own results and those of other groups)							
Y6	Microbes Healthy Lifestyle	Light	Sound	Maths and literacy Science	Environment and Evolution	Circuits	8
	Scientific method identifying variables to be changed measured and kept the same Using a range of equipment to measuring with accuracy, precision and skill Greater use of repeat measurements and calculating mean averages Graphing skills (more on line graphs, interpreting line graphs, introduction to scatter graphs, and using graphs to make predictions) Beginning to evaluate data quality and suggest improvements						
Y7	Particles and solutions	Simple chemical reactions (combustion/ reactivity)		Photosynthesis			9
	Cells and reproduction	Forces and motion		Energy resources			
	Universe	Variety of life		Electricity and magnetism			
	Simple chemical reactions (acids and alkalis)						
Scientific method greater ability to identify variables to be controlled and limitations of experiments Measuring with accuracy, precision and skill Graphing skills (drawing bar charts, pie charts, line and smooth curve graphs, interpreting line graphs, identifying and handling outliers) Beginning to evaluate data quality							
Y8	Elements mixtures and compounds	Heating and cooling	Biomechanics	Waves (contd)	Respiration	Ecology (Transition task (Wadham))	8
	Nutrition (digestion + transport)		Waves		Rocks		
Scientific method - greater understanding of control variables and using a control in an experiment Measuring with greater accuracy, precision and skill using digital and analogue equipment Routinely taking repeat measurements and calculating means Graphing skills (drawing bar charts, pie charts, line and smooth curve graphs, interpreting line graphs, identifying and handling outliers) Evaluating experiments and suggesting ways of improving data quality							

At present units are spread across a whole term rather than half-termly as parallel classes need to study different topics to avoid clashes with shared equipment/rooms. Therefore topics are not always taught in the most ideal sequence due to availability of shared resources.

Yr 7 is very content dense – we could move 1 unit to Year 6 and put circuits in Year 5 so that each year group covers 8 topics per year.

There is no chemistry in Year 6. We could put some of Yr 7's Chemical Reactions topic into Yr 6 (i.e. combustion, using Bunsens, the fire triangle and fire extinguisher to year 6 to link in with explanation texts on fossil fuel formation and global warming)

End points: Aims and knowledge in evidence key stage**End of KS2 pupils can:**

- plan different types of scientific enquiry
- recognise and control variables (where necessary)
- use a range of scientific equipment to measure with increasing accuracy and precision, and to take repeat reading when appropriate
- record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- use test results to make predictions and set up further comparative and fair tests
- report and present findings, including causal relationships and explanations, using written and oral methods (e.g. lab reports, posters, models, presentations etc.)
- use evidence from a range of sources
- understand that scientific ideas develop over time as more evidence is obtained
- use scientific knowledge, facts and theories to suggest their own hypotheses
- use topic keywords and generic scientific vocabulary confidently and accurately
- assess hazards and risks
- work collaboratively with others
- develop gross and fine motor skills
- begin to convey opinions and ideas articulately and respectfully

End of KS3 pupils can:

- ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience
- make predictions using scientific knowledge and understanding
- select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying variables, choosing appropriate techniques, apparatus, and materials during fieldwork and laboratory work,
- make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements
- be aware of objectivity and the need for accuracy, precision, repeatability and reproducibility
- present observations and data using appropriate methods, including tables and graphs
- take responsibility for own and others' health and safety, evaluate and mitigate risks
- interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions
- present reasoned explanations, including explaining data in relation to predictions and hypotheses
- evaluate data, showing awareness of potential sources of random and systematic error
- identify further questions arising from their results
- apply mathematical concepts and calculate results
- understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature
- use and derive simple equations and carry out appropriate calculations undertake basic data analysis including simple statistical techniques
- understand that scientific methods and theories develop as new evidence arises and identify scientific evidence that has been used to support or refute ideas/arguments

Curriculum intent statement

Our curriculum is designed to make best use of the resources we have available, both within and outside school, (including the fieldwork season, trips and possible outreach), and to revisit topics every two years (approx.) to add to consolidate prior learning and add breadth and depth. We follow the KS2 Science National Curriculum (May 2015) and the AQA KS3 Science Syllabus (June 2016).

Our pupils will:

- develop enquiring minds through observation, questioning, modelling, and analysis
- draw conclusions based on evidence
- form tangible links between science topics, years, key stages and other subjects
- develop a strong foundation for further study
- apply their knowledge to everyday life and make informed decisions about themselves, others living things and the environment their impact on the world around them
- understand their roles in society and the effect their decisions have on the world their impact on the world around them
- take responsibility for health and safety by assessing hazards and risk and applying their learning to make informed choices at school, home, play and work
- develop an ethical understanding of the living world(respect for the environment and living things)develop respect for living things (including self and others) and to use resources wisely
- understand the significant role science plays in our everyday lives and the impact humans have upon their environment and others
- know about global career opportunities in STEM subjects as well as local employers
- have enrichment opportunities to deepen their interest and develop passion and skills through field work, exciting trips thro ugh programme of trips, clubs, STEM competitions, challenges and outreach.
- Our intent is to harness the natural curiosity of younger pupils and develop their science skills and critical thinking into enquiring and discerning

Curriculum sequencing proposed review for 2020 (SSm)

	Autumn	Autumn 2	Spring 1	Spring 1	Summer 1	Summer 2	units	
Y 5	Solids liquids gases (changing states) Reversible/irreversible change		Earth, Sun and Moon Forces	Plants Life Cycles	Dissolving	Circuits	8	
	Scientific method Measuring with accuracy, precision and skill Introduction to repeat measurements and c calculating averages Graphing skills (drawing bar charts, introduction to line graphs, interpreting line graphs) Identifying errors and suggesting improvements							
Y6	Microbes Healthy Lifestyle	Light	Sound	Maths and literacy Science	Environment and Evolution	KS3 particles and solutions Combustion, Bunsen burner licence, particles and solutions?	8	
	Scientific method Measuring with accuracy, precision and skill More on repeat measurements and c calculating mean averages Graphing skills (drawing bar charts, introduction to line graphs, interpreting line graphs) Beginning to evaluate data quality and suggest improvements							
Y7	Cells and reproduction		Simple chemical reactions (combustion recap + reactivity)		Photosynthesis			8
	Universe		Forces and motion		Energy resources			
	Simple chemical reactions (acids and alkalis)		Variety of life		Electricity and magnetism			
	Scientific method Measuring with accuracy, precision and skill Graphing skills (drawing bar charts, pie charts, line and smooth curve graphs, interpreting line graphs, identifying and handling outliers) Evaluating data quality							
Y8	Elements mixtures and compounds)	Heating and cooling	Biomechanics	Waves (contd)	Respiration	Ecology Transition task (Wadham?)	8	
	Nutrition (digestion + transport)		Waves		Rocks			
	Scientific method Measuring with accuracy, precision and skill Repeat measurements and c calculating means Graphing skills (drawing bar charts, pie charts, line and smooth curve graphs, interpreting line graphs, identifying and handling outliers) Evaluating and improving experiments and data quality							

Suggested changes:

Move circuits to end of Year 5

Add chemistry to Year 6 by moving particles and solutions from the start of Yr 7 to end of Year 6 and/or combustion from Year 7 Simple Chemical Reactions