

Key stage 3 Science curriculum overview

Year 7

Term	Topic	Cross-curricular links	SMSC
Autumn 1	Starting secondary Science		Working safely Team work
	Particles		
	Cells		
Autumn 2	Forces	Maths: Calculations of forces exerted, plotting numerical data onto graphs	
	Chemical reactions	Geography: Pollutants from fuels leading to environmental effects	The impact of combustion on the environment
Spring 1	Reproduction	RP: viewpoints of IVF	Discussion surrounding the ethics of IVF
	Energy	Maths: calculating the efficiency of appliances	Reducing energy wastage
Spring 2	Infectious disease	Life studies: benefits of vaccination programmes History: development of medicines	Evaluate the use of vaccination in the fight against infectious diseases, debate the widespread use of antibiotics
Summer 1	Electrical circuits		
	Acids and alkalis		
Summer 2	Space	Maths: calculations of distance and scales	
	Separating mixtures		Accessibility to clean drinking water

Year 8

Term	Topic	Cross-curricular links	SMSC
Autumn 1	Earth systems	Geography: Human impact of waste on the environment	Evaluation of product lifecycles
	Nutrition and digestion	Life studies, food technology: importance of a healthy diet	Importance of a healthy diet
Autumn 2	Light		
	Atoms, elements and compounds	Resistant materials: properties of metals and metal alloys	
Spring 1	Gas exchange and respiration	Life studies: impact of drugs and smoking on the body	Impact of drugs and smoking on the body
	Heating and cooling		
Spring 2	Reactants and products		
	Plants and photosynthesis		Conflict between maximising crops and the impact on the environment
Summer 1	Sound	Music: vibrations as a means of making sounds, pitch and intensity of sounds Drama: performance acoustics	
Summer 2	Relationships in ecosystems	Geography: human impacts on the environment and interruption to food chains	Conflict between maximising crops and the impact on the environment
	Motion		

Year 9

Term	Topic	Cross-curricular links	SMSC
Autumn 1	Pressure and moments		
	Magnets and electromagnets		
	Inheritance and evolution	Geography: biodiversity	Impact of human behaviour on the environment and biodiversity
Autumn 2	Using resources	Geography: impact of mining for resources on the environment	
	Useful reactions		
Spring 1	Enrichment project		
	Careers week		
Spring 2	Bridging KS3 to KS4 topic		
Summer 1	GCSE Biology topic 7 Ecology	Geography: greenhouse effect, global warming and climate change	Impact of human behaviour on the environment and biodiversity
Summer 2	GCSE Chemistry fundamentals	Physics: structure of the atom Maths: use of standard form	
	GCSE Physics topic 1 Energy	Maths: recognise expressions in decimal form, use ratios, percentages and fractions, change the subject of an equation, substitute numerical values into algebraic equations, translate information between numerical and graphical form, construct and interpret frequency tables and charts, use an appropriate number of significant figures.	

KS4 Biology

Year 10

Term	Topic	Cross-curricular information	SMSC
Autumn 1	Topic 1 Cells	RP: use of stem cells to treat medical conditions Maths: converting between units, rearranging the subject of an equation, standard form, decimal form, make order of magnitude calculations, use fractions, ratios and percentages, calculate surface area and volume, determine the slope and intercept of a linear graph, move between numerical and graphical data.	Ethics around the use of stem cells to treat medical conditions
Autumn 2	Topic 2 Organisation	Maths: construct and interpret frequency tables and graphs, decimal form, use fractions, ratios and percentages, use a scatter diagram to identify correlation between two variables, translate information between graphical and numerical form, the principles of sampling, significant figures, calculate surface area	Considerations of what constitutes a healthy lifestyle, including the interaction between conditions in impacting on an individuals overall health.

		Food technology: balanced diet	
Spring 1	Topic 3 infection and response	History: development of medicine	Evaluate the global use of vaccination in the prevention of disease. The trial of new drugs, publication of data and peer review.
Spring 2	Topic 4 Bioenergetics	Maths: solving simple algebraic equations, use expressions in decimal form, use ratios, fractions and percentages, construct and interpret frequency tables, move between numerical and graphical form, inverse proportion	
Summer 1	Revision and preparation for paper 1		
Summer 2	Reflect and improve on paper 1 exams		

Year 11

Term	Topic	Cross-curricular information	SMSC
Autumn 1	Topic 5 Homeostasis	RP and Life: use of contraception and treatment of infertility Maths: translate between numerical and graphical form, construct and interpret frequency tables and graphs.	Social and ethical issues surrounding IVF and contraception.
Autumn 2	Revision for mock exams		
Spring 1	Topic 6 Inheritance and evolution	RP: theories of evolution, embryonic screening Maths: probability, translating information between numerical and graphical form.	Ethical issues surrounding embryonic screening, genetic engineering, cloning (triple only), selective breeding
Spring 2	Topic 7 Ecology	Chemistry: Greenhouse effect and climate change. Geography: climate change, biodiversity Maths: calculating mean, median, mode and range, translating information between numerical and graphical form, plot experimental data onto graphs	Evaluate conflicting pressures when aiming to maintaining biodiversity, tackling climate change, food supply chains (triple only), conflict over competition for land for food produce and conservation of endangered habitats
Summer 1	Preparation for GCSE final exams		

KS4 Chemistry

Year 10

Term	Topic	Cross-curricular information	SMSC
Autumn 1	Atomic structure and the Periodic table	Physics: structure of the atom Maths: use of standard form	Development of scientific theories
Autumn 2	Bonding, structure and the properties of materials	Resistant materials: structure and uses of materials Maths: Geometry, graph construction, ratios, fractions and	Development of nanotechnology

		percentages, use of expression in decimal form	
Spring 1	Chemical changes	Maths: order of magnitude calculations	
Spring 2	Quantitative chemistry Energy changes	Maths: use of standard form, decimal places, significant figures, change the subject of an equation, substitute numerical data into algebraic equations	
Summer 1	Revision and preparation for paper 1		
Summer 2	Reflect and improve on paper 1 exams		

Year 11

Term	Topic	Cross-curricular information	SMSC
Autumn 1	Chemistry of the atmosphere	Biology and Geography: greenhouse effect, global warming, climate change Maths: use ratios, fractions and percentages	Greenhouse effect, global warming, climate change, acid rain. Development of scientific theories.
Autumn 2	Rate and extent of chemical change	Maths: decimal form, standard form, use ratios, fractions and percentages, translate between graphical and numerical form, determine the slope and intercept of a linear graph, draw and use the slope of a tangent to a curve as measure of rate of change	
Spring 1	Using resources	Geography: impact of mining on the environment Maths: orders of magnitude, construct frequency diagrams, decimal form, significant figures, translate between graphical and numerical form	Lifecycles of products, drinking water supplies, mining for metal ores and alternative ways to obtain metals
Spring 2	Chemical analysis Organic Chemistry	Maths: recognise and use expressions in standard form, use ratios, fractions and percentages,	Use of polymers
Summer 1	Preparation for GCSE final exams		

KS4 Physics

Year 10

Term	Topic	Cross-curricular information	SMSC
Autumn 1	Energy	Maths: recognise expressions in decimal form, use ratios, percentages and fractions, change the subject of an equation, substitute numerical values into algebraic equations, translate information between numerical and graphical form, construct and interpret frequency tables and charts, use an appropriate number of significant figures.	Impact of energy use on the environment, evaluation of alternative ways to generate energy

Autumn 2	Electricity	Maths: change the subject of an equations, substitute numerical values into algebraic equations, solve simple algebraic equations, plot two variables from experimental data, determine the slope and intercept of a linear graph, draw and use the slope of a tangent to a curve as a measure of rate of change, use ratios, fractions and percentages,	
Spring 1	A; above		
Spring 2	Particle model of matter	Maths: recognise and use expressions in decimal form and standard form, use ratios, fractions and percentages, change the subject of an equation, substitute numerical values into algebraic equations, solve simple algebraic equations, translate information between graphical and numerical form	
Summer 1	Atomic structure	Chemistry: model of the atom, development of the model of the atom Maths: recognise expressions given in standard form, use ratios, fractions and percentages, substitute numerical values into algebraic equations, translate information between graphical and numerical form, solve simple algebraic equations,	Development of theories over time, uses of radiation,
Summer 2	Revision of paper 1		

Year 11

Term	Topic	Cross-curricular information	SMSC
Autumn 1	Forces	Maths: change the subject of an equation, substitute numerical values into algebraic equations, translate information between numerical and graphical form, use angular measures in degrees, visualise and represent 2D and 3D forms, use ratios, fractions and percentages, use expressions in decimal and standard form, calculate mean, median and mode, determine the slope and intercept of a linear line graph,	
Autumn 2	Revision of paper 1 in preparation for mock		
Spring 1	Waves	Maths: use ratios, fractions and percentages, change the subject of an equation, substitute numerical values into algebraic equations using appropriate units.	SMSC: risks and consequences of exposure to radiation
Spring 2	Magnetism	Maths: change the subject of an equation, substitute numerical values into algebraic equations using appropriate units.	

Summer 1	Preparation for GCSE final exams		
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