

## 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	<b>Maths:</b> Calculations of forces exerted, plotting numerical data onto graphs	
	Chemical reactions	<b>Geography:</b> Pollutants from fuels leading to environmental effects	The impact of combustion on the environment
Spring 1	Reproduction	<b>RP:</b> viewpoints of IVF	Discussion surrounding the ethics of IVF
	Energy	<b>Maths:</b> calculating the efficiency of appliances	Reducing energy wastage
Spring 2	Infectious disease	<b>Life studies:</b> benefits of vaccination programmes <b>History:</b> 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	<b>Maths:</b> calculations of distance and scales	
	Separating mixtures		Accessibility to clean drinking water

### Year 8

Term	Topic	Cross-curricular links	SMSC
Autumn 1	Earth systems	<b>Geography:</b> Human impact of waste on the environment	Evaluation of product lifecycles
	Nutrition and digestion	<b>Life studies, food technology:</b> importance of a healthy diet	Importance of a healthy diet
Autumn 2	Light		
	Atoms, elements and compounds	<b>Resistant materials:</b> properties of metals and metal alloys	
Spring 1	Gas exchange and respiration	<b>Life studies:</b> 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	<b>Music:</b> vibrations as a means of making sounds, pitch and intensity of sounds <b>Drama:</b> performance acoustics	
Summer 2	Relationships in ecosystems	<b>Geography:</b> 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	<b>Geography:</b> biodiversity	Impact of human behaviour on the environment and biodiversity
Autumn 2	Using resources	<b>Geography:</b> 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	<b>Geography:</b> greenhouse effect, global warming and climate change	Impact of human behaviour on the environment and biodiversity
Summer 2	GCSE Chemistry fundamentals	<b>Physics:</b> structure of the atom <b>Maths:</b> use of standard form	
	GCSE Physics topic 1 Energy	<b>Maths:</b> 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	<b>Maths:</b> 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.

		<b>Food technology:</b> balanced diet	
<b>Spring 1</b>	<b>Topic 3 infection and response</b>	<b>History:</b> 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.
<b>Spring 2</b>	<b>Topic 4 Bioenergetics</b>	<b>Maths:</b> 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	
<b>Summer 1</b>	<b>Revision and preparation for paper 1</b>		
<b>Summer 2</b>	<b>Reflect and improve on paper 1 exams</b>		

## **Year 11**

<b>Term</b>	<b>Topic</b>	<b>Cross-curricular information</b>	<b>SMSC</b>
<b>Autumn 1</b>	<b>Topic 5 Homeostasis</b>	<b>RP and Life:</b> use of contraception and treatment of infertility <b>Maths:</b> translate between numerical and graphical form, construct and interpret frequency tables and graphs.	Social and ethical issues surrounding IVF and contraception.
<b>Autumn 2</b>	<b>Revision for mock exams</b>		
<b>Spring 1</b>	<b>Topic 6 Inheritance and evolution</b>	<b>RP:</b> theories of evolution, embryonic screening <b>Maths:</b> probability, translating information between numerical and graphical form.	Ethical issues surrounding embryonic screening, genetic engineering, cloning (triple only), selective breeding
<b>Spring 2</b>	<b>Topic 7 Ecology</b>	<b>Chemistry:</b> Greenhouse effect and climate change. <b>Geography:</b> climate change, biodiversity <b>Maths:</b> 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
<b>Summer 1</b>	<b>Preparation for GCSE final exams</b>		

## **KS4 Chemistry**

### **Year 10**

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

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

## **Year 11**

<b>Term</b>	<b>Topic</b>	<b>Cross-curricular information</b>	<b>SMSC</b>
<b>Autumn 1</b>	<b>Chemistry of the atmosphere</b>	<b>Biology and Geography:</b> greenhouse effect, global warming, climate change <b>Maths:</b> use ratios, fractions and percentages	Greenhouse effect, global warming, climate change, acid rain. Development of scientific theories.
<b>Autumn 2</b>	<b>Rate and extent of chemical change</b>	<b>Maths:</b> 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	
<b>Spring 1</b>	<b>Using resources</b>	<b>Geography:</b> impact of mining on the environment <b>Maths:</b> 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
<b>Spring 2</b>	<b>Chemical analysis Organic Chemistry</b>	<b>Maths:</b> recognise and use expressions in standard form, use ratios, fractions and percentages,	Use of polymers
<b>Summer 1</b>	<b>Preparation for GCSE final exams</b>		

## **KS4 Physics**

### **Year 10**

<b>Term</b>	<b>Topic</b>	<b>Cross-curricular information</b>	<b>SMSC</b>
<b>Autumn 1</b>	<b>Energy</b>	<b>Maths:</b> 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

<b>Autumn 2</b>	<b>Electricity</b>	<b>Maths:</b> 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,	
<b>Spring 1</b>	<b>A; above</b>		
<b>Spring 2</b>	<b>Particle model of matter</b>	<b>Maths:</b> 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	
<b>Summer 1</b>	<b>Atomic structure</b>	<b>Chemistry:</b> model of the atom, development of the model of the atom <b>Maths:</b> 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,
<b>Summer 2</b>	<b>Revision of paper 1</b>		

## **Year 11**

<b>Term</b>	<b>Topic</b>	<b>Cross-curricular information</b>	<b>SMSC</b>
<b>Autumn 1</b>	<b>Forces</b>	<b>Maths:</b> 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,	
<b>Autumn 2</b>	<b>Revision of paper 1 in preparation for mock</b>		
<b>Spring 1</b>	<b>Waves</b>	<b>Maths:</b> 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
<b>Spring 2</b>	<b>Magnetism</b>	<b>Maths:</b> change the subject of an equation, substitute numerical values into algebraic equations using appropriate units.	

<b>Summer 1</b>	<b>Preparation for GCSE final exams</b>		
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