

SUBJECT CURRICULUM OUTLINE

Term	Topic/Unit of work	Knowledge	Skills	Assessment
Autumn Term 1	Electricity (1-13)	Circuit diagrams; charge; current; potential difference; resistance; series & parallel circuits (incl. reqd. pracs).	Knowledge & understanding; Practical skills; Maths skills: Graphical analysis; rearranging equations Drawing conclusions from data; Scientific modelling	1C - Atomic Structure PR1 extended STAMP - structure & bonding, infection & response and energy 2B - cells 3P - energy 4C - chemical changes 5B - organisation 6P - electricity
	Cells (13-22)	Chromosomes; mitosis; cell cycle; diffusion; exchange surfaces; osmosis	Knowledge and understanding: Plant and animal cell structure, reproduction in animals, specialised cells. Practical skills: Microscopy, measuring, modelling Maths skills: orders of magnitude.	
	Energy changes (all)	Endo & exothermic reactions; activation energy; bond energies	Practical skills - measure temperature changes, investigate the variables that affect temperature changes Maths skills - Recognise and use expressions in decimal form.	
	Particle model (1-13)	Changes in state & internal energy; heating/cooling curves; SHC & SLH; density; gas pressure	Knowledge & understanding; Practical skills; Maths skills: Graphical analysis; rearranging equations Drawing conclusions from data; Scientific modelling	
Autumn Term 2	Particle model			
	Energy changes			
	Atomic Structure (physics) (all)	Structure of the atom, history of the atom, isotopes, radiation, nuclear equations	Maths skills - standard form, ratios, fractions and percentages, Substitute numerical values into algebraic equations, graph skills (half life)	

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			Working scientifically - prefixes and powers of ten for orders of magnitude, scientific vocabulary, terminology and definitions, Understand how scientific methods and theories develop over time.	
	Quantitative chem (all)	Conservation of mass, mass during a reaction, relative formula mass, moles, concentration, uncertainty, excess,	<p>Knowledge and understanding: Chemical formula, using the periodic table, structure of the atom, chemical equations, reactants and products</p> <p>Practical skills: Use of Bunsen burners, measuring mass and volume using scientific equipment</p> <p>Maths skills: balancing equations, calculating mass, Interpreting data from tables, converting units, Scientific modelling</p>	
	Bioenergetics	Aerobic respiration, anaerobic respiration, physical effects of exercise, metabolism/function of the liver.	<p>Knowledge and understanding Graphical analysis Balancing equations</p> <p>Practical skills: Measuring heart rate before and after exercise</p> <p>Key words: Lactic acid, oxygen debt, ventilation, respiration.</p>	
Spring Term 1				
	Rates of reaction		<p>Maths skills - decimal form, ratios, fractions and percentages, Make estimates, graph skills(plotting, gradients & tangents)</p> <p>Practical skills - investigating the factors that affect rate of reaction, use scientific theories and</p>	

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			explanations to develop hypotheses, record observations and measurements	
	Inheritance	Sexual and asexual reproduction meiosis, DNA, Sex determination, genetic disease, genetic engineering, variation, selective breeding, evolution and extinction	Knowledge and understanding: Chromosomes, reproduction in animals, specialised cells, cell cycle, communicable disease and risk factors. scientific vocabulary, terminology and definitions, Maths skills:drawing tables and graphs. Analysis of genetic cross diagrams	
Spring Term 2	Rates of reaction			
	Organisation	Enzymes/enzymes in digestion, rates of reaction, limiting factors (5-7) Plant organs, transport in plants (transpiration), active transport (19-22)	Knowledge and understanding Working scientifically (req prac: enzyme rate of reaction) Maths skills: graph Graphical analysis Keyworks: Substrate, denature, concentration.	
	Forces	Interaction pairs; weight&gravity; resultant forces; work done; elastic/inelastic deformation; elastic pe.;displacement-time & velocity-time graphs; acceleration; Newton's laws; terminal velocity;stopping distance; resolving forces & free body diagrams; momentum (HT only)	Knowledge & understanding; Drawing conclusions from data; Maths skills: Use of ratios and proportional reasoning to compare rates;Graphical analysis; rearranging equations.	

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	Bioenergetics	Photosynthesis, Limiting factors of photosynthesis	Knowledge and understanding Practical skills (Req Prac: rate of photosynthesis - light intensity) Maths skills: Graph Graphical analysis Balancing equations Keywords: Light intensity, limiting factors	
Summer Term 1				
	Waves			
	Atmosphere	Proportions of gas in the atmosphere, Early atmosphere, greenhouse gas, pollution, global climate change and carbon footprint.		
	Chemical changes (recap+electrolysis)			
Summer Term 2				