

	Theme	Topics	Knowledge
<b>Year 10</b>			
<b>Autumn 1</b>	Biology	Cells & Microscopy	Eukaryotes and prokaryotes Animal and plant cells Growth, differentiation and cell specialisation Microscopy Cell division Stem cells
	Chemistry	Atomic structure and periodic table	Transport in cells Atoms, elements and compounds Mixtures Development of the atomic model Sub-atomic particles Size and mass of atoms Relative atomic mass Electronic structure The periodic table Metals and non-metals Group 0 elements Group 1 elements Group 7 elements
<b>Autumn 2</b>	Physics	Energy	Energy stores and systems Changes in energy Energy changes in systems Power Energy transfers in a system Efficiency National and global energy resources
	Biology	Cells and organisation	Stem cells Cell division

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	Physics	Particle model of matter	Amounts of substances ion equations Limiting reactants Density of materials Changes of state Internal energy Temperature changes in a system and specific heat capacity Changes of state and specific latent heat Particle motion in gases
<b>Spring 2</b>	Biology	Bioenergetics	Photosynthesis Uses of glucose Aerobic respiration Anaerobic respiration Response to exercise Metabolism
	Chemistry	Chemical changes	Metal oxides The reactivity series Extraction of metals and reduction Oxidation and reduction via electron movement (HT only) Reactions of acids with metals Neutralisation of acids and salt production Soluble salts The pH scale and neutralisation Strong and weak acids (HT only) Electrolysis of molten ionic compounds Using electrolysis to extract metals Electrolysis of aqueous solutions Half equations representing electrolysis (HT only)
	Physics	Electricity	Standard circuit diagram symbols Electrical charge and current Current, resistance and potential difference Resistors

			Series and parallel circuits Direct and alternating potential difference Mains electricity Power and energy transfers Energy transfers in everyday appliances The National Grid
<b>Summer 1</b>	Chemistry	Energy changes	Energy transfer during exothermic and endothermic reactions Reaction profiles The energy change of reactions (HT only)
	Physics	Structure of the atom	The structure of an atom Mass number, atomic number and isotopes The development of the model of the atom (common content with chemistry) Radioactive decay and nuclear radiation Nuclear equations Half-lives and the random nature of radioactive decay Radioactive contamination
<b>Summer 2</b>	Chemistry	Rate and extent of chemical change	Calculating rates of reaction Factors that affect the rate of chemical reaction Collision theory and activation energy Catalysts Energy changes and reversible reactions Equilibrium The effect of changing conditions on equilibrium (HT only) The effect of changing concentration (HT only) The effect of temperature changes on equilibrium (HT only) The effect of pressure changes on equilibrium (HT only)
<b>Year 11</b>			
<b>Autumn 3</b>	Biology	Homeostasis and response	Homeostasis The human nervous system The human endocrine system

	Chemistry	Organic chemistry	Controlling blood glucose Hormone during reproduction Contraception Hormonal treatments Feedback systems Crude oil, hydrocarbons and alkanes Fractional distillation and petrochemicals Properties of hydrocarbons Cracking and alkenes
	Physics	Forces	Scalar and vector quantities Contact and non-contact forces Gravity Resultant forces Work done and energy transfer Forces and elasticity Describing motion along a line Distance and displacement Speed Velocity The distance–time relationship Acceleration Newton's First Law Newton's second Law Newton's Third Law Stopping distance Reaction time Factors affecting braking distance Momentum (HT only)
<b>Autumn 4</b>	Biology	Inheritance, variation and evolution	Sexual and asexual reproduction Meiosis DNA and the genome

	<p>Chemistry</p> <p>Physics</p>	Chemical analysis	<p>Genetic inheritance</p> <p>Inherited disorders sex determination</p> <p>Variation and evolution</p> <p>Selective breeding</p> <p>Genetic engineering</p> <p>Fossil evidence</p> <p>Extinction</p> <p>Resistant bacteria</p> <p>Classification of living things</p> <p>Pure substances</p> <p>Formulations</p> <p>Chromatography</p> <p>Test for hydrogen</p> <p>Test for oxygen</p> <p>Test for carbon dioxide</p> <p>Test for chlorine</p> <p>Transverse and longitudinal waves</p> <p>Properties of waves</p> <p>Types of electromagnetic waves</p> <p>Properties of electromagnetic waves</p> <p>Uses and applications of electromagnetic waves</p>
<b>Spring 3</b>	Biology	Ecology	<p>Communities</p> <p>Abiotic and biotic factors</p> <p>Levels of organisation</p> <p>How materials are naturally recycled</p> <p>Biodiversity</p> <p>Waste management</p> <p>Land use</p> <p>Deforestation</p> <p>Global warming</p> <p>Maintaining biodiversity</p>

	Chemistry	Chemicals of the atmosphere	The proportions of different gases in the atmosphere The Earth's early atmosphere how oxygen increased How carbon dioxide decreased greenhouse gases Human activities which contribute to an increase in greenhouse gases in the atmosphere Global climate change The carbon footprint and its reduction Atmospheric pollutants from fuels Properties and effects of atmospheric pollutants
	Physics		Poles of a magnet Magnetic fields The motor effect Electromagnetism Fleming's left-hand rule (HT only) Electric motors (HT only)
<b>Spring 4</b>	Chemistry	Using resources	Using the Earth's resources and sustainable development Potable water Waste water treatment Alternative methods of extracting metals (HT only) Life cycle assessment Ways of reducing the use of resources