



Years 10 & 11 Curriculum

GCSE: Triple Science



Year 10	BIOLOGY				
	Autumn 1 & 2		Spring 1 & 2		Summer 1 & 2
Topic	Cell Biology	Organisation	Infection & Response	Bioenergetics	Ecology
Key Concepts	- Cell structure - Microscopy & magnification - Prokaryotes & eukaryotes - Differentiation & specialised cells - Cell cycle & mitosis - Stem cells - Diffusion - Osmosis - Active transport	- Organisation & digestive system - Enzymes - Heart & circulation - Blood vessels & blood components - Coronary heart disease - Lung structure & functions - Plant tissue - Plant transport	- Cancer - Health and lifestyle factors & disease - Pathogens - Defence against disease - Vaccination - Antibiotics & painkillers - Drug trials - Plant diseases & response - Monoclonal antibodies & uses	- Photosynthesis - Limiting factors, greenhouses & uses of glucose - Aerobic respiration & metabolism - Anaerobic respiration - Response to exercise	- Classification - Communities, abiotic & biotic factors - Adaptations including extremophiles - Food chains & predator prey relationships - Water & carbon cycles, decomposition* - Land use & waste management - Maintaining biodiversity - Trophic levels & pyramids of biomass - Food security, farming techniques & sustainable fisheries - Role of biotechnology

Year 10	CHEMISTRY						
	Autumn 1 & 2			Spring 1 & 2		Summer 1 & 2	
Topic	Atomic Structure	Structure & Bonding	Chemical Calculations I	Energy Changes	Separation	Chemical Changes II	Salts
Key Concepts	- Atoms, elements and compounds - History of the atom - Atomic structure - Ions and isotopes	- Ionic bonding - Covalent bonding - Metallic bonding - Nanoscience	- Relative masses & moles - Masses & balanced equations	- Endothermic & exothermic reactions - Reaction profile diagrams - Bond enthalpy - Conservation of mass - Gas calculations	- Filtration - Crystallisation - Distillation	- Extraction of metals - Electrolysis of molten compounds - Electrolysis of aqueous compounds - Half-equations - Chemical & fuel cells	- Salts from metals - Salts from insoluble bases - Neutralisation and pH - Strong and weak acids - Concentrations of solutions
	The Periodic Table				Chemical Changes I		Chemical Calculations II
	- Development of the periodic table - Metals, non-metals and transition elements - Groups 1, 7 and 0 - Transition metals				- Reactivity series - Oxidation & reduction (REDOX)		- Yield & atom economy - Measurements & uncertainties

Year 10	PHYSICS				
	Autumn 1	Autumn 2	Spring 1	Spring 2 & Summer 1	Summer 2
Topic	Energy	Electricity	Particle Model	Waves	Atomic Structure
Key Concepts	- Energy stores - Changes in energy - Energy changes in systems - Power - Energy transfers - Efficiency - Energy resources	- Circuit symbols - Charge & current - Ohm's Law & resistance - Series & parallel circuits - Thermistors & LDRs - Electricity at home - Power & energy - Static charge & electric fields	- Density of regular shaped objects - Density of irregular shaped objects - Particle model - Changes of state - Physical & chemical changes - Specific heat capacity - Internal energy & latent heat - Motion of particles in a gas - Pressure in gases	- Wave properties - Reflection of waves - Sound waves - Waves for detection & exploration - Electromagnetic waves - Refraction - Changes in atoms & radio waves	- The atom - Radioactive decay - Nuclear decay equations - Half life - Radiation safety - Hazards & uses of radioactive emissions & background radiation - Nuclear



Years 10 & 11 Curriculum *continued*

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Year 11 BIOLOGY				
Autumn 1 & 2			Spring 1 & 2	
Topic	Homeostasis		Inheritance, Variation & Evolution	
Key Concepts	- The human nervous system - The brain - Structure of the eye & accommodation - Homeostasis, endocrine & body temperature - Control of blood glucose & diabetes	- Hormones & the menstrual cycle - Hormones & infertility/contraception - Plant hormones & uses - Control of water levels in the body - Kidney function, ADH & kidney failure	- Sexual & asexual reproduction - DNA & the genome - Meiosis - Protein synthesis & the effect of mutation - Inheritance & gender - Genetic disorders	- Types of variation - Evolution, natural selection & speciation - Evidence for evolution - Selective breeding & genetic engineering - Cloning

Year 11 CHEMISTRY							
Autumn 1 & 2				Spring 1 & 2			
Topic	Organic Chemistry I	Rates of Reaction	Chemical Calculations III	Chemical analysis	The Earth's Atmosphere	Organic Chemistry II	Using Resources
Key Concepts	- Crude oil, hydrocarbons and alkanes - Fractional distillation - Combustion - Alkenes & cracking - Polymers	- Rate of reaction & collision theory - Factors affecting rate - Reversible reactions - Equilibria - The Haber process	- Moles, balancing equations - From masses to balanced equations - Limiting reactants - Concentrations - Titrations	- Ion tests - Instrumental techniques - Chromatography	- The Earth's atmosphere - Greenhouse gases - The greenhouse effect - Global climate change	- Alcohols and their reactions - Carboxylic acids and their reactions - Polymerisation methods (addition & condensation) - Biological molecules	- Life Cycle Assessments (LCAs) - Potable water/cleaning water - Alternative methods of extracting metals - Corrosion - Alloys - Ceramics, polymers & composites - Potable water

Year 11 PHYSICS				
Autumn 1 & 2		Spring 1	Spring 2	
Topic	Forces	Magnetism & Electromagnetism	Space	
Key Concepts	- Forces & their interactions - Resultant forces - Forces & elasticity - Moments, levers & gears - Describing motion along a line - Distance and Velocity time graphs - Acceleration	- Newton's 1st, 2nd & 3rd Laws - Stopping distances & reaction times - Forces & braking - Momentum & changes in momentum - Pressure in fluids - Atmospheric pressure	- Magnets & magnetic fields - Electromagnetism - Flemings left hand rule & electric motors (HT only) - Loudspeakers - Induced potential & the generator effect - Transformers	- Lifetime of a star - Our solar system - Orbital motion - Redshift



Years 10 & 11 Assessment

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All pupils will sit several knowledge tests and a mock examination in Year 10. In Year 11, pupils will sit an assessment and a mock examination.

	Year 10		Year 11		Revision Resources
	Knowledge Tests	Mock Exam	Assessment	Mock Exam	
	Autumn/Spring Terms	Summer Term	Autumn Term	Autumn Term	
Style of Assessment	Each knowledge test will consist of 20 multiple-choice questions	Each assessment will contain a variety of questions including multiple choice, structured, closed short answer, and open response			<i>Kennet Resources</i> - Core Questions - Knowledge Organisers - Learning Habits
Topics Assessed	Core knowledge taught until that point in the academic year	Biology: Cell biology, organisation, infection, and response, bioenergetics Chemistry: Atomic structure and the periodic table, bonding & structure, and quantitative chemistry Physics: Energy, electricity, particle model of matter, waves	Biology: Cell biology, organisation, infection, and response, bioenergetics Chemistry: Atomic structure and the periodic table, bonding & structure, quantitative chemistry, chemical changes, and energy changes Physics: Energy and electricity, particle model of matter, waves, atomic structure	Biology: Cell biology, organisation, infection and response, bioenergetics, homeostasis and response, inheritance, and ecology Chemistry: Atomic structure and the periodic table, bonding and structure, quantitative chemistry, chemical changes, and energy changes (<i>Paper 1</i>) Physics: Energy, electricity, particle model of matter and atomic structure (<i>Paper 1</i>)	<i>External Resources</i> www.educake.co.uk www.educationquizzes.com www.bbc.com/bitesize www.youtube.com