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

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

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

	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

	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		
	Knowledge Tests	**Mock Exam**	**Assessment**	**Mock Exam**	**Revision Resources**
	Autumn/Spring Terms	**Summer Term**	**Autumn Term**	**Spring 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			*Kennet Resources* • Core Questions • Knowledge Organisers • Learning Habits *External Resources* • www.educake.co.uk • www.educationquizzes.com • www.bbc.com/bitesize • www.youtube.com You can also find additional revision material on Frog
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 *(Paper 1)* • **Physics:** Energy, electricity, particle model of matter and atomic structure *(Paper 1)*	

Exam Board: AQA

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