SIR GRAHAM BALFOUR SCHOOL

CURRICULUM OVERVIEW – KEY STAGE 4 SCIENCES

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 10	**Biology – Organisms – Organisation** Principles of organisation Plant tissue, organs and systems		**Biology – Infection and Response** Communicable diseases Monoclonal antibodies (Biology GCSE only) Plant disease (Biology GCSE only)		**Biology – Bioenergetics** Photosynthesis Respiration	
	Chemistry **Bonding, Structure and the Properties of Matter** How bonding and structure are related to the properties of substances Structure and bonding of carbon Bulk and surface properties of matter(Chemistry GCSE only) **Quantitative Chemistry** quantitative interpretation of chemical equations Use of amount of substance in relation to masses of pure substances (and volumes for Chemistry GCSE only) Yield and atom economy (Chemistry GCSE only)		**Chemistry** **Chemical Changes** Reactivity of metals Reactions of acids Electrolysis		**Chemistry** **Energy Changes** Exothermic and endothermic reactions Chemical cells and fuel cells	
	Physics **Particle Model** Changes of state and the particle model Internal energy and energy transfers Particle model and pressure **Energy** Energy changes in a system Conservation and dissipation of energy National and Global energy resources		**Physics** **Electricity** Current, potential difference and resistance Series and parallel circuits Domestic uses and safety Energy transfers Static electricity (Physics GCSE only)		**Physics** **Forces** Forces and their interactions Work done and energy transfer Moments, levers and gears (Physics GCSE only) Pressure and pressure difference in fluids (Physics GCSE only)	
Year 11	**Biology – Ecology** Adaptations, interdependence and competition Organisation of an ecosystem Biodiversity Trophic levels in an ecosystem (Biology GCSE only) Food production (Biology GCSE only)		**Biology – Homeostasis** The human nervous system Hormonal coordination Plant hormones (Biology GCSE only)		**Biology – Inheritance** Reproduction Variation and evolution Development of genetics and evolution and Classification of living organisms **Revision**	
	Chemistry **Rates of Reaction** Rate of reaction Reversible reactions and dynamic equilibrium and Organic Chemistry Carbon compounds as fuels and feedstock Reactions of alkenes and alcohols (Chemistry GCSE only) Synthetic and naturally occurring polymers (Chemistry GCSE only)		**Chemistry.** **Chemical Analysis** Purity, formulations and chromatography Identification of common gases Identification of ions by chemical and spectroscopic means (Chemistry GCSE only) **Chemistry of the Atmosphere** The composition and evolution of the Earth's atmosphere Carbon dioxide and methane as greenhouse gases Common atmospheric pollutants and their sources		**Chemistry** **Chemical Resources** Using the Earth's resources and obtaining potable water Life cycle assessment and recycling Using materials (Chemistry GCSE only) The Haber process and the use of NPK fertilisers (Chemistry GCSE only) **Revision**	
	Physics **Forces** Forces and motion Forces, accelerations and Newton's Laws of motion Forces and braking Momentum **Waves** Waves in air, fluids and solids Electromagnetic waves Black body radiation (Physics GCSE only)		**Physics** **Electromagnets** Permanent and induced magnetism, magnetic forces and fields The motor effect Induced potential, transformers and the National Grid (Physics GCSE only) **Space** (Physics GCSE only) Solar system and orbital motion Red shift		**Physics – Revision**	