Science Stage Three Curriculum – Carre's Grammar School

Science						
	Autumn 1	**Autumn 2**	**Spring 3**	**Spring 4**	**Summer 5**	**Summer 6**
Year 7	**Working Scientifically, Cells, Forces and Particles and their behaviour,** • Basic skills required for investigative Science • Looking at cells, their structure and function • Unicellular organisms and diffusion • Discovering what forces are, how they are measured, what impact different forces have on objects. • What is matter? How does matter change in solid, liquid and gaseous forms		**Structure and function of body systems, Energy & Elements, atoms and compounds, the Periodic Table** • Organisation of cells in plants and animals • Respiratory system • Musculoskeletal system • What is energy? • How is energy transferred? • How is energy used? • What are elements, atoms and compounds • How are the elements organised? • Chemical formulae		**Health and Lifestyle, Electricity and Magnetism & Reactions** • The effects of healthy and unhealthy lifestyles on your body -diet & digestion, drugs, alcohol and smoking. • How electrical circuits work • How electricity is generated • Magnets and magnetic fields & using magnets. • What are chemical reactions? • Using word and symbol equations • Combustion, thermal decomposition, endothermic and exothermic reactions	
	Assessment **Baseline test 1 – 1st lesson of the year** **Baseline test 2 – on completion of Topic 1** **end of topic tests**		**Assessment** **End of topic tests**		**Assessment** **End of topic tests** **End of Year examination.**	
Year 8	**Separation techniques, Reproduction, Motion & Pressure, Acids & Alkalis** • What are mixtures and • What are pure substances? What are solutions, solubility • How can mixtures be separated (filtration, evaporation, distillation, chromatography). • Reproduction in plants • Reproduction in animals (humans, inc. puberty & adolescence) • Speed, motion graphs • Pressure in gases and liquid sand on solids • Moments • What are acids and alkalis, how can they be identified - indicators • Neutralisation • Making salts.		**Ecosystem processes, waves, metals and acids** • Photosynthesis and respiration • Leaves, plant minerals and chemosynthesis • Food chains & webs • Ecosystems as a whole • What are waves • Sound waves • Echoes and ultrasound • What is light • Reflection, refraction and diffraction • Reactions using metals and acids, oxygen and water. • Displacement reactions • Extracting metals • Ceramics, polymers and composites.		**Adaptation and inheritance, Space, The Earth, Investigative project (biscuit dunking?)** • Competition and adaptation in organisms • Adapting to change, variation • How inheritance works • Natural selection and distinction. • The night sky • Solar system • The Earth & moon • Earth and atmosphere • Types of rocks • Rock cycle • Carbon cycle • Climate change • Recycling	
	Assessment **End of topic tests**		**Assessment** **End of topic tests**		**Assessment** End of Year examination (June)	
Year 9	**Adaptations, Interdependence and competition, Organising an ecosystem.**		**Biodiversity and ecosystems** • Human population		**Cells and organisation, Organisation and the digestive system**	

Science Stage Three Curriculum – Carre's Grammar School

Biology	• Organisms and their environment • Distribution and abundance • Adaptation and competition in plants and animals • Feeding relationships • Predator-prey relationships • Cycles – carbon, water & decay • Rates of decomposition	• Pollution – land, water and air • Deforestation & peat destruction • Global warming • Impact of change • Maintaining biodiversity • Biomass • Sustainable food production.	• Microscopes • Plant and animal cells (structure and function) • Specialised cells in plants and animals • Diffusion, osmosis and active transport • Exchanging materials • Tissues and organs • Digestive system, Enzymes & digestion • Food tests
	Assessment **End of October – end of topic test 1** **End of December – end of topic test 2**	**Assessment** End of February – end of topic test 3 April - end of Year exam	**Assessment** May – end of topic test 4 July – end of topic test 5
Year 9 Chemistry	The Earth's atmosphere • History of the Earth's atmosphere. • Our evolving atmosphere. • Greenhouse gases. • Global climate change. • Atmospheric pollutants • Atoms • Chemical equations • Separating mixtures • Fractional distillation • Chromatography	• History of the atom • Structure of the atom • Ions, atoms and Isotopes • Electronic structures • Finite and renewable resources. • Water safe to drink • Treating waste water	• Extracting metals from ores • Life cycle assessments • Reduce, reuse and recycle • Development of the Periodic Table • Electronic structures and the Periodic Table • Group I – the alkali metals • Group VII – the halogens • Explaining trends • The transition elements
	Assessment **End of October – end of topic test 1** **End of December – end of topic test 2**	**Assessment** End of February – end of topic test 3 April - end of Year exam	**Assessment** May – end of topic test 4 July – end of topic test 5
Year 9 Physics	Topic 3 – The Particle Model of Matter. • Using kinetic theory to explain the properties of solids, liquids and gases. • Calculating the densities of materials. • Describing the changes to the internal energy of substances when they are being heated or cooled. • Describing and explaining the relationships between temperature, pressure and volume of a gas.	Topic 4 – Atomic structure • Describing the development of models of the atom. • Describing instability of atomic nuclei, radioactive decay and half-life. • Nuclear radiation • Explaining the hazards associated with nuclear radiation. • Explaining medical uses of sources of nuclear radiation. • Comparing the processes of nuclear fission and nuclear fusion.	Topic 1 – Energy • Describing systems, energy stores and transfers • Calculating power and efficiency. • Testing different thermal insulators to reduce heat loss in homes. • Considering the advantages and disadvantages of different energy resources used to generate electricity. • Using the law of conservation of energy in calculations involving kinetic, gravitational potential and elastic potential energy.
	Assessment Beginning of October – Test on kinetic theory and density. Mid-December – End of topic assessment on Topic 3	**Assessment** End of February – mid-topic review of models of the atom, radioactive decay and properties of nuclear radiation. Mid-March - end of Year exam on Topics 3+4	**Assessment** Beginning of June – Mid-topic assessment on energy transfers, power, efficiency and thermal insulators. July – end of topic test on Topic 1