Year 10 Academic Year Science Curriculum

The study of Science fires pupils' curiosity about phenomena in the world around them and offers opportunities to find explanations. It engages pupils at many levels, linking direct practical experience with scientific ideas. Experimentation and modelling are used to develop and evaluate explanations, encouraging critical and creative thought. Pupils learn how knowledge and understanding in Science are rooted in evidence. They discover how scientific ideas contribute to technological change (for example in business and medicine) and lead to improving the quality of life. They trace the development of Science worldwide and recognise its cultural significance. They learn to question and discuss issues that may affect their own life and the future of the World. Pupils follow the Key Stage 4 Science Programme of Study in Year 10. The principal focus of science teaching in Key Stage 4 is to develop a deeper understanding of a range of scientific ideas in Biology, Chemistry and Physics. Pupils will begin to see the connections between these subject areas and become aware of some of the key ideas underpinning scientific knowledge and understanding.

Our combined Sciences curriculum gives learners the opportunity to study Biology, Chemistry and Physics, each covered in separate lessons. Learners gain an understanding of the basic principles of each subject through a mix of theoretical and practical studies, while also developing an understanding of the scientific skills essential for further study.

They learn how science is studied and practised and become aware that the results of scientific research can have both good and bad effects on individuals, communities and the environment. As well as focusing on the individual sciences, the course helps learners to understand the technological world in which they live and take an informed interest in science and scientific developments.

Our course has been designed to cover topics which will be in both Cambridge and Pearson iGCSE Examinations.

Our lessons are taught by teachers specialised to teach science to iGCSE level.

Term 1	Topic	Details
1	**Biology – B1 Cells.**	Cells, characteristics of living things, cells and cells and organisms.
2	**B2 Movement in and out of cells.**	Diffusion, Osmosis.
3	**Chemistry – C1 Planet Earth**	The atmosphere, Water Treatment, The Earth's Crust
4	**Chemistry – C2 The nature of matter**	The states of matter, separating and purifying substances, Atoms and molecules
5	**Chemistry – C2 The nature of matter**	The structure of the atom, Electron arrangements in atoms
6	**Physics – P1 Making measurements**	How measuring improves, measuring length, density, measuring time
7	**Physics – P2 Describing motion**	Understanding speed, distance-time graphs, understanding acceleration, calculating speed and acceleration
8	**Mid Term Test and Review**	
9	**Biology B4 Plant Nutrition, B6 Transport in Plants**	Types of nutrition, photosynthesis, leaves, use of glucose, testing leaves for starch. Plant transport systems, Water uptake, Transpiration, Transport of manufactured food.
10	**B7 Transport in Mammals**	The Circulatory system, the heart, blood vessels, blood
11	**C3 Elements and Compounds**	The periodic table, Trends in groups, trends across a period,
12	**C3 Elements and Compounds**	Chemical bonding in elements and compounds, chemical formulae of elements and compounds, metals, alloys and crystals
13	**C4 Chemical reactions**	Chemical reactions, equations for chemical

		reactions, types of chemical reactions, redox reactions, electrolysis
14	**P3 Forces and motion**	Roller-coaster forces, We have lift off, mass, weight and gravity, force, mass and acceleration
15	**P4 Turning effects of forces. P5 Forces and matter**	Keeping upright, The moment of force, Calculating moments, stability and centre of mass, forces acting on solids, stretching springs, Hooke's law, Pressure
16	**End of Term Test and Review**	
Term 2	**Topic**	**Details**
1	**C5 Acids, bases and salts**	What is an acid? Acid and alkali solutions, metal oxides and non-metal oxides, acid reactions in everyday life, alkalis and bases, characteristics reactions of acids, acids and alkalis in chemical analysis, salts, preparing soluble salts, choosing a method for salt preparation.
2	**C7 How far, How fast**	Energy changes in chemical reactions, rates of reactions, catalysts, reversible reactions
3	**C8 Patterns and Properties in metals**	The alkali metals, Aluminium, the transition elements, reactivity of metals
4	**P6 Energy transformation and energy transfers. P7 Energy resources**	Energy for life, forms of energy, energy conversions, conservation of energy, energy calculations. The energy we use, Energy from the Sun
5	**P8 Work and Power. P9 The Kinetic model of matter**	Doing work, calculating work done, Power, Calculating power. States of matter, The kinetic

		model of matter, Forces and the kinetic theory, Gases and the kinetic theory
6	**P10 Thermal properties of matter P11 Thermal (heat) energy transfers**	Thermal expansion, temperature and temperature scales, designing a thermometer. Conduction, Convection, Radiation, some consequences of thermal (heat) energy transfer
7	**P14 Properties of Waves**	All at sea, describing waves, speed frequency and wavelength, explaining wave phenomena
8	**Mid Term Test and Review**	
9	**B8 Respiration and Gas Exchange**	Respiration, Gas exchange in humans, tobacco smoking
10	**P16 Magnetism**	Permanent magnets, magnetic fields
11	**P19 Electric Circuits**	An international language, circuit components, combination of resistors, electrical safety
12	**P18 Electrical quantities**	Current in electric circuits, Electrical resistance, More about electrical resistance, electricity and energy
13	**Biology –** **B12 Inheritance** **B13 Variation and Selection.**	Chromosomes, Cell division and Inheritance Variation and Selection.
14	**B14 Organisms and their environment**	Ecology, energy flow, the carbon cycle, human influences on ecosystems
15	**Revision Lesson**	
16	**End of Term Test and Review**	Test week