

Science KS3 Curriculum Intent, Implementation and Impact Overview

Year: 9 Subject: Science IMPLEMENTATION							
<p style="text-align: center;">INTENT</p> <p>(including KS3 National Curriculum Science, key concepts and skills)</p>	<p>Scientific enquiry Context: Scientific enquiry and maths in science skills Key Vocabulary: Variable, prediction, anomalous, repeatable, precise, mean, significant Prior Learning / LTM: Planning and taking measurements. Cultural Capital: The scientific method</p>	<p>Biology 1 Context: Context: <u>Introduction to biology</u> - cells, microscopes, blood, organ systems, digestion Key Vocabulary: Organelle, mitochondria, ribosome, magnification, specialised, platelet, plasma, red blood cell, white blood cell, vein, artery, valve, capillary, aorta, vena cava, pulmonary, stent, statin, bypass, pacemaker, gland, muscle, bile, detoxification, enzyme, catalyst, denature Prior Learning / LTM: Cells, microscopes, blood, organ systems, digestion Cultural Capital: Working in the NHS: diagnosing, advising treatments, analyzing blood test results, sickle cell disease</p>	<p>Chemistry 1 Context: <u>Introduction to Chemistry</u> - States of matter, Atoms, Elements and Compounds. Structure of the periodic table, conservation of mass, representing reactions with equations, making new materials and linking to properties. Key Vocabulary: Atom, electron, proton, neutron, trend, model, balance, conservation, element, compound, polymer, composite, property Prior Learning / LTM: Particle theory, changes of state, chemical reactions, atoms. Cultural Capital: Dalton and early models of the atom. History and development of the periodic table - Dmitri Mendeleev Polymers and development of new materials.</p>	<p>Physics 1 Context: <u>Introduction to applied physics</u> - conversion of quantities, vectors and scalars, displacement and distance, speed and velocity, acceleration, velocity time graphs, distance time graphs, investigating and applying key physical ideas to real world situations. Key Vocabulary: Speed, velocity, displacement, distance, acceleration, deceleration, time, metres, kilometres, rate of change, vector, scalar, direction, magnitude, size, proportional, gradient, area, deceleration, seconds, minutes, hours. Prior Learning / LTM: Knowledge of speed, speed units, speed changes interaction.</p>	<p>Biology 2 Context: <u>Expanding biology</u> - diet, chemistry of food, organ systems, drugs and alcohol puberty, reproduction, hormones, contraception Key Vocabulary: Deficiency, Benedict's, biuret, iodine, starch, ethanol, lipid, trachea, bronchus, bronchioles, alveoli, diffusion, carcinogen, nicotine, carbon monoxide, tar, stimulant, depressant, addiction, hormones, urethra, testes, seminal vesicle, scrotum, uterus, cervix, ovary, oviduct, oestrogen, progesterone, fertilisation, contraception, in vitro fertilisation, fertility, infertility Prior Learning / LTM: Reproductive systems, balanced diet, basic food tests, organ systems Cultural Capital: IVF treatment, drug and alcohol laws, puberty and identity, contraception, dietary requirements and meal plans</p>	<p>Chemistry 2 Context: <u>Metals and metal reactions</u> - Physical and chemical properties of metals. Metal reactions with acids, water and oxygen. Investigating rusting and uses of alloys. Reactivity of metals, displacement and extracting metals. Making salts, energy changes and neutralisation. Key Vocabulary: Metal, non-metal, property, malleable, reactivity, displace, electrolysis, hydrogen, salt, base, oxide, alloy Prior Learning / LTM: Periodic table, reactions, acids and alkalis. Cultural Capital: Extraction of metals. Uses of Alloys and Sheffield steel. Hypotheses and application to modern buildings.</p>	<p>Physics 2 Context: <u>Expansion of applied physics</u> - Forces contact and non-contact, Force interactions, Moments, Force multipliers, Momentum, stopping distance, centre of mass, Kinetic energy, gravitational potential energy, weight drag and terminal velocity and Investigating and applying key physical ideas to real world situations. Key Vocabulary: Velocity, acceleration, deceleration, time, metres, kilometres, vector, direction, magnitude, size, proportional, mass, kilogram, gravitational field strength, gravitational potential energy, friction, resultant, equilibrium, centre of mass, thrust, reaction, contact, non-contact. Prior Learning / LTM: Knowledge of forces, force units, force interaction, resultant forces and weight. Cultural Capital: Newton's laws of motion, Felix Baumgartner, Space X,</p>

				Cultural Capital: Land speed world record, Usain Bolt's 100m WR, Local distances, Real world uses of mathematics.			Trebuchets levers in history.
Apply knowledge and understanding to explain observations.	x	x	X	X	x	x	x
Use different types of scientific enquiry to answer scientific questions.	x	x	X	X	x		x
Use technical terminology with confidence accurately and precisely.	x	x	X	X	x	x	x
Apply mathematical knowledge to scientific understanding.	x	x	X	X	x	x	x
Awareness of some of the social and economic implications of science	x	x		x		x	
IMPACT	Assessment: Skills 1: tabulating data. Progression to KS4: Scientific enquiry and maths in science.	Assessment: Skills 2-Graphical presentation Extended writing- Cells Biology 1 test Progression to KS4: cells and organisation. Bioenergetics. Scientific enquiry.	Assessment: Skills 3 – Calculating means Extended writing -Atoms Chemistry 2 test Progression to KS4: Atomic structure, molecules and matter	Assessment: Skills 4 – Anomalies Extended writing vectors and scalars Physics 1 test Progression to KS4: Forces and force multipliers	Assessment: Skills 5 – Conclusions Biology 2 test Extended writing - smoking Progression to KS4: Reproduction, variation, Disease	Assessment: Skills 6 – Analysis and evaluation Extended writing -Group 1 Chemistry 2 test Progression to KS4: Periodic table, Chemical analysis, bonding.	Assessment: Extended writing force and acceleration. Physics 2 test Progression to KS4: Motion, forces and motion.

Cultural Capital is the body of knowledge a student needs so that they can flourish in the future and not be left behind. LTM = Long Term Memory.