

Curriculum Overview – Science KS3

	Year 7	Year 8	Year 9
Autumn	<u>Cycle 0</u> - What is science? - Lab Equipment - Lab Safety - Safety poster competition - Measuring - Lab safety review - Drawing equipment <u>Cycle 1:</u> Cells, tissues, systems, and organisms - Life processes - Organs - Plant and animal cells - Plant structure and organs - Organ systems Mixtures and separation - Investigating saturated solutions - Filtration - Crystallisation - Chromatography - Distillation Particle model - Solids, Liquids & gases - State Changes - Particle theory - Diffusion - Pressure End of Cycle Exam <u>Cycle 2:</u>	<u>Cycle 1</u> Plants & reproduction - 5 Kingdoms - Plant structures - Sexual reproduction - Asexual reproduction - Pollination - Seeds Metals and their uses - Properties of metals - Chemical reactions of metals - Reactivity series - Corrosion - Displacement reactions - Chemical equations Energy & Transfers - Radiation, conduction, convection - Investigating insulation - Power and efficiency - Domestic fuels – uses and costs - Eco homes – research End of Cycle Exam <u>Cycle 2:</u> Breathing and respiration - Respiratory system - Gas exchange - Aerobic respiration - Anaerobic respiration	<u>Cycle 1:</u> Discovering Cells - Microscope Skills - Looking at cells – Microscope practical - Plant and animal cells - Specialised cells - Adaptations - Bacterial cells - Microscopes and magnification numeracy Chemical Reactions - Reactions of metals - Neutralisation reactions - Precipitation reactions - Describing reactions – Chemical equations - Particle model for reactions - Balancing equations Laws of Motion - Who was Isaac Newton? - Newton's laws of motion - Focus on Newton's Third law – Acceleration practical - Gravity and acceleration of freefall - Terminal velocity End of Cycle Exam <u>Cycle 2:</u>

	The human body - Human body - Breathing and gas exchange - The circulatory system & blood - Investigating pulse - The skeleton - Muscles & drugs Acids and Alkalis - pH scale - Indicators - Neutralisation - Chemical equations - Investigating concentration - Making a salt Energy - Types of energy - Energy transfers - Investigating energy in food - Fossil fuels - Renewable energy - Energy Efficiency End of Cycle Exam	- Structure of the heart Atoms, elements, compounds - Atoms - Molecules - Chemical reactions - Elements, compounds, mixtures - Balancing equations - -Protons, electrons, neutrons - Fluids - States of matter - State changes - Pressure in fluids - Investigating melting points - Heating curves - Investigating density End of Cycle Exam	Discovering Enzymes - Enzymes – structure, function and specificity - Enzyme action (Lock and key theory) - Enzymes in the digestive system - Factors that affect enzyme activity - practical - Bacteria in the digestive system Chemistry Calculations - Chemical formulas and RFM - Ratios of elements - RFM - Conservation of mass - Yield – actual and theoretical and percentage yield - Concentration of solutions dilution and concentration Forces that cause motion - Vectors, scalars and speed - Resultant forces - Acceleration - Motion graphs – distance-time - Motion graphs – velocity -time - Simple machines- levers, pulleys and gears - End of Cycle Exam
January exam (Including cycle one and 2)			
Spring	Cycle 3: Ecosystems - Animal kingdoms - Habitats - Investigating variation - Adaptations - Food chains and webs - Biotic and abiotic factors Atoms and elements	Cycle 3: Unicellular organisms - Animal, plant, and bacterial cells - Investigating diffusion - Pathogen research (IT) - Pathogens - Aseptic technique - Bacteria	Cycle 3: Discovering Hormones - Endocrine system - Hormones and the menstrual cycle - Contraception - Control of blood glucose - Diabetes type 2 and BMI - Homeostasis

- Elements and the periodic table - Elements, compounds, and mixtures - Making compounds - Metals and non-metals - Chemical reactions - Investigating temperature changes Current and electricity - Circuit diagrams - Measuring current - Series and parallel circuits - Voltage - Models of electricity - Resistance - Electrical safety and how is electricity made? End of Cycle Exam Cycle 4 Sexual reproduction - Human reproductive organs - Internal and external reproduction - Puberty - The menstrual cycle - Gestation & birth - Abortion debate - Periodic table - The atom - Structure of the periodic table - Protons, neutrons & electrons - Drawing electron diagrams - Mendeleev's table - Drawing atoms Forces - Forces - Weight and Gravity - Types of forces - Springs	- Investigating antibiotics - Useful Bacteria Reactivity series - Chemical formulas - Reactivity series of metals and displacement reactions - Halogens and reactivity - Rusting experiment - Reduction and oxidation - Exothermic and endothermic reactions - Fermentation Force Fields and magnets - Magnets - Static electricity - Investigating current in series and parallel - Resistance - Electromagnets End of cycle test Cycle 4 Plants and growth - Photosynthesis - Leaf structure - Root hair cells and transpiration - Mineral ions - Plant diseases - Food security - Chemical tests - Testing for hydrogen - Testing for Carbon dioxide - Testing for oxygen - Testing for chlorine and ammonia - Flame tests - Halide tests Earth and space - The solar system - Planets - Orbits - Seasons	Discovering Organic Chemistry - Crude oil - Fractional distillation - Alkanes - Alkenes - Polymers - Making polymers – practical Discovering Radioactivity - The unstable nucleus - Background radiation - Measuring radiation - Types of radiation - Half-life - Nuclear disasters End of Cycle Exam Cycle 4 Plants and photosynthesis - Plant and leaf structure - Photosynthesis - Factors that affect photosynthesis - Light intensity and photosynthesis practical - Absorbing water potometer practical Energy of reactions - Activation energy - Energy profiles of reactions - Exothermic and endothermic - Rates of reaction - Catalysts - Rate of reaction practical Physical forms of Energy - Energy stores and transfers - Energy efficiency - Heat transfers – conduction, convection and radiation - Insulation practical - Energy calculations
--	---	---

	- Isaac Newton - Pressure - Friction - Balanced and unbalanced forces. End of Cycle Exam	- Gravity End of Cycle Exam	- Renewable and non-renewable sources of energy End of Cycle Exam
Summer	<u>Cycle 5</u> Food and nutrition - Food groups - Balanced diet - Journey of your food - Digestion and absorption - Food tests - Enzymes Waves - Types of waves - Sound waves - The ear - Animals and sound - Comparing waves - Uses of sound Revision for End of year exams	<u>Cycle 5</u> Bonding Introduction - Ions - Ionic compounds - Covalent Bonding - Molecules - Metallic bonding - Polymers, ceramics and composites EM Spectrum - Longitudinal vs transverse - EM spectrum - Uses & dangers of EM waves - Wave speed calculations - Wave speed practical Revision for End of year exams	<u>Cycle 5</u> Separation techniques - States of matter recap - Mixtures and purity - Filtration and crystallisation - Paper chromatography - Simple distillation practical - Purifying water Waves - Types of waves - Light and sound - EM waves - Reflection - Refraction - Transmission Revision for End of year exams
	End of year exams		
	<u>Cycle 6</u> Light - Light and colour - Reflection - Refraction - Refraction practical - Total internal reflection Combustion - Renewable and non-renewable fuels	<u>Cycle 6</u> Rocks - Composition of the earth - Structure of the earth - The rock cycle - Erosion and weathering - The Carbon cycle - Composition of the atmosphere	<u>Cycle 6</u> Diseases and spread - Threat of disease - Diseases - Testing medicines - Control systems - Ecology and distribution - Containing pandemics Skills booklet

	- Oxidation - Investigating fuels - Greenhouse effect and Global warming - Acid rain - Incomplete combustion	Genetics and evolution - Variation - Inherited variation - DNA - Mitosis - Meiosis - Natural selection	- Practical and data analysis - Exam technique End of Cycle Exam
--	--	--	--