KS3-4 Curriculum Map: SCIENCE

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
Year 7	Working Scientifically Core Ideas: Safety & equipment, variables, acids & alkalis, diet Core Skills: Scientific literacy and oracy, working safely and identifying hazards, selecting and using apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data	Interactions -Cells Core Ideas: Cells, organs, body systems, energy stores, renewable energy Core Skills: Scientific literacy and oracy, working safely and identifying hazards, selecting and using apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data	Interactions - Particles Core Ideas: Forces, contact and non-contact forces, solids, liquids & gases, changing state, diffusion Core Skills: Scientific literacy and oracy, working safely and identifying hazards, selecting and using apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data	Plants & Energy Core Ideas: Flower structure, seed dispersal, food webs, power, Insulating heat loss Core Skills: Scientific literacy and oracy, working safely and identifying hazards, selecting and using apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data	Forces & Materials Core Ideas: Speed, distance-time graphs, material properties, density, recycling Core Skills: Scientific literacy and oracy, working safely and identifying hazards, selecting and using apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data	Space & Movement Core Ideas: Day & night, gravity & weight, seasons, skeletal system, joints & muscles Core Skills: Scientific literacy and oracy, working safely and identifying hazards, selecting and using apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data
Year 8	Digestion & Reproduction Core Ideas: Food tests, enzymes, human reproductive system, menstrual cycle, pregnancy & birth Core Skills: Scientific literacy and oracy, working safely and identifying hazards, selecting and using apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data	Mixtures & Waves Core Ideas: Pure substances, separating techniques, sound, the ear, using sound waves Core Skills: Scientific literacy and oracy, working safely and identifying hazards, selecting and using apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data	Lungs & Light Core Ideas: The respiratory system, breathing, gas exchange, reflection & refraction,the eye, dispersion Core Skills: Scientific literacy and oracy, working safely and identifying hazards, selecting and using apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data	Elements & Compounds Core Ideas: Metals & non-metals, periodic table, groups in the periodic table, compounds Core Skills: Scientific literacy and oracy, working safely and identifying hazards, selecting and using apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data	Respiration & Rocks Core Ideas: Aerobic & anaerobic respiration, structure of the Earth, rock types, the rock cycle Core Skills: Scientific literacy and oracy, working safely and identifying hazards, selecting and using apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data	Electricity & Magnetism Core Ideas: Symbols & circuits, current and PD, resistance, magnetism, electromagnetism Core Skills: Scientific literacy and oracy, working safely and identifying hazards, selecting and using apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data
Year 9	Chemical reactions & Genetics Core Ideas: Conservation of mass, acid reactions, reactivity, DNA, inheritance & variation, natural selection Core Skills: Scientific literacy and oracy, working safely and identifying hazards, selecting and using	Kinetic Theory & Industrial Chemistry Core Ideas: Expansion & density, Brownian motion, cooling curves, oxidation, combustion, metal extraction Core Skills: Scientific literacy and oracy, working safely and identifying hazards,	Photosynthesis & Pressure Core Ideas: Photosynthesis, leaf adaptations, plant minerals, calculating pressure, pressure in liquids, atmospheric pressure Core Skills: Scientific literacy and oracy, working safely and identifying hazards, selecting and using	Rearranging Atoms & Reusing Carbon Core Ideas: Endothermic & exothermic reactions, catalysts, metal oxides, acid rain, carbon cycle, uses for C-containing molecules Core Skills: Scientific literacy and oracy, working safely and identifying hazards,	Conserving ENergy & Climate Change Core Ideas: Levers & gears, moments, energy changes, Hooke's Law, greenhouse gases, iImpacts of climate change Core Skills: Scientific literacy and oracy, working safely and identifying hazards,	Biodiversity Core Ideas: Biodiversity, gene banks Core Skills: Scientific literacy and oracy, working safely and identifying hazards, selecting and using apparatus, taking measurements, collecting and processing data,

	apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data	selecting and using apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data	apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data	selecting and using apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data	selecting and using apparatus, taking measurements, collecting and processing data, (including drawing graphs), analysis and evaluation of data	(including drawing graphs), analysis and evaluation of data
Year 10	<u>B1 - Cell Biology</u> <u>B2 - Organisation</u> <u>C1 - Atomic structure and the Periodic Table</u> Core Ideas: In B1 Types of cells, microscopy, cell cycle, stem cells, transport in cells, exchanging substances In B2 Cellular organisation in plants & animals, enzymes, organisation & organ systems within the human body, health & disease, non communicable disease, cancer, plant organisation & systems In C1 Atoms, elements, compound & mixtures, equations, separation techniques,history of the atom, electronic configuration, development of the periodic table, periodic trends Core Skills: Practical skills, critical thinking, evaluating, planning, investigating, describing, analytical maths, collaborative group work, graphing	<u>B3 - Infection and response</u> <u>B4 - Bioenergetics</u> <u>C2 - Bonding, structure and the properties of matter</u> Core Ideas: In B3 Communicable disease in animals & plants, viral, fungal & protist disease, bacterial diseases & preventing disease, fighting disease, drug development In B4 Photosynthesis, respiration & metabolism, aerobic & anaerobic respiration, exercise In C2 Ions & ionic bonding, covalent bonding, giant & simple molecular structures, allotropes of carbon, polymers, metallic bonding, states of matter & changes in state Core Skills: Practical skills, critical thinking, evaluating, planning, investigating, describing, analytical maths, collaborative group work, graphing	<u>P1 - Energy</u> <u>B3 - Infection and response</u> <u>B4 - Bioenergetics</u> Core Ideas: In B3 Communicable disease in animals & plants, viral, fungal & protist disease, bacterial diseases & preventing disease, fighting disease, drug development In B4 Photosynthesis, respiration & metabolism, aerobic & anaerobic respiration, exercise In P1 Energy stores & systems, specific heat capacity, conservation of energy & power, efficiency, renewable and non-renewable energy resources Core Skills: Practical skills, critical thinking, evaluating, planning, investigating, describing, analytical maths, collaborative group work, graphing	<u>P2 - Electricity</u> <u>C3 - Quantitative chemistry</u> <u>C4 - Chemical changes</u> Core Ideas: In C3 Relative formula mass, the Mole & equations, conservation of mass, limiting reactants, concentrations of solutions In C4 Acids & bases, strong & weak acids, reaction of acids, the reactivity series, separating metals from metal oxides, redox reactions, electrolysis In P2 Current & circuit symbols, resistance, I-V characteristics, series & parallel circuits, electricity in the home, power of electrical devices, the national grid Core Skills: Practical skills, critical thinking, evaluating, planning, investigating, describing, analytical maths, collaborative group work, graphing	<u>P3 - Particle model of matter</u> <u>P4 - Atomic structure</u> <u>C5 - Energy changes</u> Core Ideas: In C5 Exothermic & endothermic reactions, bond energies In P3 The particle model & motion in gases, density of materials, internal energy & changes of state, specific latent heat In P4 Developing the model of the atom, Isotopes & nuclear radiation, nuclear equations, half life, iIrradiation & contamination Core Skills: Practical skills, critical thinking, evaluating, planning, investigating, describing, analytical maths, collaborative group work, graphing	<u>B5 - Homeostasis and response</u> <u>B6 Inheritance, variation and evolution</u> Core Ideas: In B5 Homeostasis, the nervous system, synapses and reflexes,the endocrine system, controlling blood glucose, puberty & the menstrual cycle, controlling fertility, adrenaline & thyroxine In B6 DNA & the genome, sexual & asexual reproduction, genetic inheritance, sex determination, genetic disorders Core Skills: Practical skills, critical thinking, evaluating, planning, investigating, describing, analytical maths, collaborative group work, graphing
Year 11	<u>B6 Inheritance, variation and evolution</u> <u>P5 Forces</u>	<u>B7 Ecology</u> <u>P5 Forces</u>	<u>P6 Waves</u> <u>P7 Magnetism and electromagnetism</u>	<u>C8 Chemical analysis</u> <u>C9 Chemistry of the atmosphere</u>	Core Ideas:	Core ideas:

	Core Ideas: In B6 Variation & evolution, selective breeding, genetic engineering, fossils, antibiotic resistant bacteria, classification In P5 Contact & non-contact forces, weight, mass & gravity, calculating forces, forces & elasticity, distance, displacement, speed & velocity, acceleration, distance-time & velocity - time graphs Core Skills: Practical skills, critical thinking, evaluating, planning, investigating, describing, analytical, maths, collaborative group work, graphing	Core Ideas: In B7 Competition,abiotic & biotic factors, food chains,quadrats, transects, water cycle, carbon cycle, biodiversity & waste management, global warming, deforestation & land use, maintaining Ecosystems & Biodiversity In P5 Terminal velocity, Newton's first & second laws, inertia, investigating motion, stopping distance, reaction time, momentum Core Skills: Practical skills, critical thinking, evaluating, planning, investigating, describing, analytical, maths, collaborative group work, graphing	<u>C6 The rate and extent of chemical change</u> <u>C7 Organic chemistry</u> Core Ideas: In P6 Transverse & longitudinal waves, wave behaviours, electromagnetic waves, refraction, electromagnetic spectrum, uses and dangers of electromagnetic waves In P7 Permanent & induced magnets, electromagnetism, the motor effect, electric motors In C6 Rate of reaction including measuring & factors affecting them, finding reaction rates from graphs, reversible reactions, Le Chatelier's principle In C7 Hydrocarbons, fractional distillation, uses & cracking of crude oil Core Skills: Practical skills, critical thinking, evaluating, planning, investigating, describing, analytical, maths, collaborative group work, graphing	<u>C10 using resources</u> Core Ideas: In C8 Purity & formulations, paper chromatography, test for gasses In C9 In C9 The evolution of the atmosphere, greenhouse gasses & climate change, carbon footprints, air pollution In C10 Finite & renewable resources, reuse and recycling, life cycle assessment, potable water, wastewater treatment Core Skills: Practical skills, critical thinking, evaluating, planning, investigating, describing, analytical, maths, collaborative group work, graphing	Core Skills:	Core Skills: