Curriculum Mapping in Science

KS2 (Years 5–6)

Year Group	Term	Content	Key Skills	Vocabulary
Year 5	Autumn	Properties and changes of materials Forces	• Understand properties of materials- • Explore dissolving and separating mixtures • Identify reversible changes • Making new materials • Investigate gravity, air resistance, water resistance • Use levers, pulleys and gears	solid, liquid, gas, property, hard, soft, flexible, mixture, electric, transparent, materials force, move, stop, surface, gravity, friction, water resistance, air resistance, lever, gear, pulley
Year 5	Spring	Earth and Space	• Know the planets of the solar system • Explain the Sun, Earth and Moon relationship • Understand day and night • Phases of the moon	planet, space, Earth, Moon, gravity, orbit, axis, rotate, star, solar system
Year 5	Summer	Living things and their habitats- lifecycles Animals including humans- human life cycle	• Describe life cycles • Explain reproduction in plants, mammals and amphibians • How seeds disperse • Fertilisation • Gestation • Stages of human life cycle • Puberty	lifecycle, reproduction, sexual, asexual, plant, animal, amphibian, Mammal, metamorphosis, seed, dispersal gestation, fertilisation, foetus, teenager, puberty, senior, egg, sperm, DNA

Year 6	Autumn	Electricity Light	• Electrical symbols • Circuits • Voltage • Renewable energy • Conductors and insulators • What is light? • How light travels • Reflective light • The eye • Shadows • Mirrors • Refraction	Circuit, Series, Motor, Switches, Recognised, Symbols, Buzzer, Danger, Volume Travels, Straight, Object, Shadows, Reflect, Reflection, Mirror, Periscope, Rainbow, Light Source, Filters
Year 6	Spring	Inheritance and Evolution Living things and their habitats	• Adaptations • Evolution • Natural selection • Parents and offspring/ inheritance • Fossils • Life processes • Different ways of classifying animals • Classification keys • Microorganisms • Carl Linnaeus	Fossils, Offspring, Vary, Variation, Evolution, Inheritance, Adaptation, Environment, Extreme, Conditions, Advantageous, Disadvantageous, Natural selection Classify, Organism, Characteristics, Features, Segmented, Amphibian, Reptile, Mammal, Crustacean, Arachnid, Echinoderm, Annelid
Year 6	Summer	Animals including humans – Circulatory and digestive system	• Circulatory system • Parts of the heart • Heart rate • Nutrient transportation • Digestive system • Healthy lifestyles	Organs, heart, lungs, oxygenated, deoxygenated, carbon dioxide, blood, Digestive system, Circulatory System, Nutrients, Substances, Lifestyle, intestine

KS3 (Years 7–9)

Year Group	Term	Content	Key Skills	Key vocabulary per term (not an exhaustive list)
Year 7	Autumn	Lab Safety	• Hazard awareness	Hazard, risk, risk assessment, hypothesis, investigation, dependent variable, independent variable, control variable, equipment, observation, evidence, claim
		Cells and Organisation	• Using a light microscope	Cells, tissues, organs, organ systems, organism, unicellular, multicellular, nucleus, organelles, joints, ligaments, tendons
Year 7	Spring	States of Matter and Separating Mixtures	• Separating techniques	Particle, solid, liquid, gas, melting, freezing, evaporation, condensation, sublimation, distillation, filtration, chromatography
		Energy Changes and Transfers	• Applying energy concepts	Energy, input, output, work done, displacement, deformation, conductor, insulator, conduction, convection, radiation, store
Year 7	Summer	Reproduction	• Describing reproduction in humans and plants	Gametes, menstruation, ovulation, intercourse, fertilisation, implantation, gestation, embryo, foetus, birth, pollination, seed
		Atoms and the Periodic Table	• Using the Periodic Table	Atoms, elements, molecules, compounds, symbols, formulae, properties, Periodic Table, periods, groups, metals, non-metals
		Forces	• Identifying and explaining the effects of forces	Force, balanced, equilibrium, unbalanced, resultant, contact, non-contact, deformation, tension, compression, linear, Newton

Year 8	Autumn	Health and the Human Body Chemical Reactions	• Describing digestion, gas exchange and health • Understanding chemical reactions	Breathing, trachea, bronchi, bronchioles, alveoli, lungs, ribs, diaphragm, digestive system, diet, enzymes, deficiency, bacteria, recreational drugs, health Chemical reaction, physical change, reactants, products, equation, formulae, conservation of mass, fuel, combustion, thermal decomposition, oxidation, displacement
Year 8	Spring	Electricity and Magnetism Photosynthesis and Respiration	• Describing electricity and magnetism • Explaining photosynthesis and respiration	Current, electrons, positive, negative, series, parallel, circuit, component, potential difference (voltage), resistance, field, electromagnet Photosynthesis, stomata, chlorophyll, carbon dioxide, water, glucose, oxygen, energy, respiration, aerobic, anaerobic
Year 8	Summer	Earth and Atmosphere Space	• Exploring the structure of the Earth • Understanding the objects and forces in space	Earth, crust, mantle, core, igneous, sedimentary, metamorphic, carbon cycle, atmosphere, greenhouse effect, global warming, climate Gravity, mass, weight, gravitational field strength, galaxy, star, orbit, axes, seasons, light year, Earth, moon
Year 9	Autumn	Inheritance and Evolution Acids and Alkalis	• Studying genetic variation and evolution • Describing acid and alkali reactions	Inherited, environmental, characteristic, DNA, chromosome, gene, continuous variation, discontinuous variation, species, natural selection, evolution, extinction. Acid, alkali, weak, strong, indicator, pH scale, neutralisation, salt, water, exothermic, endothermic, catalyst

Year 9	Spring	Motion and Pressure Ecosystems and Interdependence	• Investigating motion and pressure • Describing Ecosystems and Interdependence	Speed, distance, time, average, relative motion, acceleration, pressure, atmospheric pressure, upthrust, force, area, moment. Interdependence, ecosystem, food chain, producer, consumer, decomposer, predator, prey, food web, food supplies, population, biodiversity
Year 9	Summer	Materials and Recycling Waves	• Considering the use and recycling of materials • Describing waves	Natural resources, mineral, ore, extraction, reactivity series, carbon, electrolysis, recycling, ceramics, polymers, composites, properties Transverse wave, longitudinal wave, vibration, frequency, pitch, amplitude, wavelength, incident ray, reflected ray, refraction, ultrasound, microphone

KS4 GCSE (Years 10–11)

Year Group	Term	Content	Key Skills	Key vocabulary per term (not an exhaustive list)
Year 10	Autumn	Unit 1: Building Blocks;	• States of matter • Atomic structure • Cells in animals and plants • Waves	Particle model, density, gas pressure, internal energy, specific heat capacity, specific latent heat, purity, atomic models, sub-atomic particles, isotope, microscopy, eukaryotic cells, prokaryotic cells, diffusion, osmosis, active transport, mitosis, meiosis, stem cell, differentiation, specialized cell, transverse, longitudinal, amplitude, wavelength, frequency, period, wave speed, electromagnetic waves, spectrum, source, absorber, radio waves, refraction reflection.
Year 10	Spring	Unit 5: Building Blocks for Understanding; Unit 6: Interactions Over Small and Large Distances;	• The periodic table • Chemical quantities • Forces and Energy changes • Structure and bonding • Magnetism and Electromagnetism	Periodic table, metals, non-metals, noble gases, alkali metals, halogens, conservation of mass, relative formula mass, moles, concentration. Forces, vector, scalar, resolving forces, work, mass, weight, gravitational potential energy, elastic deformation, elastic potential energy, spring constant, extension, ionic, covalent, metallic, electrostatic forces, intermolecular forces, magnetic fields, motor effect, electric motors.
Year 10	Summer	Unit 2: Transport Over Larger Distances	• Systems in the human body • Plants and photosynthesis	Respiration, aerobic, anaerobic, exothermic, exchange surface, surface area, volume, multicellular, circulatory system, atria, ventricles, valves, aorta, vena cava, pulmonary artery, pulmonary vein, coronary arteries, gas exchange, trachea, bronchi, bronchioles, alveoli, capillary network, pacemaker, digestive system, enzymes, carbohydrate, lipid, proteins, blood, red blood cells, white blood cells, plasma, platelets, nervous system, CNS, stimulus, receptor, coordinator, effector, response, reflex arc, sensory, relay, motor, neurones, synapse, endocrine, glands, hormones, target organ, pituitary gland, adrenaline, thyroxine, negative feedback, meristem tissue, transpiration, xylem, phloem, lignin, stomata. Chlorophyll, chromatography, photosynthesis, rate, translocation, tobacco mosaic virus, rose black spot.
Year 11	Autumn	Unit 3: Interactions with the Environment;	• Lifestyle and health • Radiation and Risk • Preventing, treating and curing diseases	Health, disease, communicable, non-communicable, risk factors, coronary heart disease, statins, stents, biological, mechanical, valves, homeostasis, insulin, diabetes, pancreas, glucose, glycogen, insulin, hormones, follicle-stimulating hormone (FSH), Luteinising hormone (LH), oestrogen, progesterone, contraception, infertility, In Vitro fertilisation (IVF), absorption, emission, radiation, decay, half-life, alpha, beta gamma, contamination, irradiation, ionizing, cancer, pathogen, bacteria, fungi, virus, protist, salmonella,

		Unit 7: Movement and Interactions;	• Forces and motion • Electricity • Acids and alkalis • The rate and extent of chemical change • Atoms into ions and ions into atoms	gonorrhoea, measles, Human Immunodeficiency Virus (HIV), antimicrobial, phagocytosis, antibodies, antitoxins, vaccination, antibiotics, resistance, toxicity, efficacy, dosage, clinical trial, double-blind, placebo, genetic modification, stem cells, interactions. Speed, velocity, distance, displacement, time, scalar, vector, circular motion, magnitude, free fall, acceleration, terminal velocity, proportional, inverse, equal, opposite, momentum, kinetic energy, reaction time, electricity, current, resistance, potential difference, series, parallel, circuit, direct, alternating, mains, power, national grid, acids, alkalis, salts, endothermic, exothermic, pH scale, neutralization, rate, surface area, temperature, concentration, pressure, activation energy, bonds, catalysts, enzymes, reversible, dynamic equilibrium, reactivity series, electrolysis, aqueous,
Year 11	Spring	Unit 8: Guiding Spaceship Earth to a Sustainable Future;	• Carbon chemistry • Resources of materials and energy	Carbon, diamond, graphite, graphene, fullerenes, nanotubes, crude oil, finite, biomass, plankton, hydrocarbons, alkanes, alkenes, fractional distillation, viscosity, flammability, fractions, solvents, lubricants, polymers, detergents, cracking, extraction, reduction, ores, electrolysis, phytomining, bioleaching, non-renewable, renewable, conservation, dissipation, insulation, efficiency, life cycle assessment (LCA), recycling.
Year 11	Summer	Unit 4: Explaining Change	• The Earth's atmosphere • Ecosystems and Biodiversity • Inheritance • Variation and Evolution	Atmosphere, carbon cycle, greenhouse effect, climate, impact, mitigation, combustion, pollutants, water cycle, potable water, ecosystem, interdependence, competition, communities, field investigation, biodiversity, quarrying, inheritance, chromosomes, genes, sex determination, allele, dominant, recessive, homozygous, heterozygous, Punnett square, genotype, phenotype, mutations, evolution, natural selection, classification, binomial system, genus, species, selective breeding, artificial selection, genetic engineering, genetic modification, vector, plasmid.

KS4 Entry Level Certificate

Year Group	Term	Content	Key Skills	Key vocabulary per component (not an exhaustive list)
Entry Level	Ongoing	Component 1 – Biology: The Human Body	• What is the body made of? • How the body works • How the body fights disease • How the body is coordinated	BY OUTCOME NUMBER: 1) Cell, cell membrane, cytoplasm, genetic, nucleus. 2) Blood, brain, carbon dioxide, heart, kidneys, liver, organ, oxygen, red blood cells, reproductive organs, tissue, white blood cells. 3) Absorbed, digestion, enzymes, gall bladder, gullet, small intestine, large intestine, liver, pancreas, saliva, salivary glands, stomach. 4) Pulse, pulse rate, respiration. 5) Bacteria, pathogen, toxin, virus. 6) Antibody, ingest, vaccination, white blood cell. 7) Addictive, antibiotic, drug, penicillin. 8) Action, automatic, coordinated, glands, hormones, reflex action, secreted, target organ. 9) Egg, glands, hormone, menstrual cycle, secreted. 10) Contraceptive, fertility, inhibit, mature, oral, stimulate.
		Component 2 – Biology: Environment, Evolution and Inheritance	• What are the feeding relationships between living organisms? • What determines where particular species live? • How life has developed on Earth	BY OUTCOME NUMBER: 1) Algae, carbon dioxide, chlorophyll, organism. Photosynthesis, producer, radiation. 2) Adapted, habitat, survival. 3) Ecosystem, food chain, food web, producer, consumer. 4) Carbon cycle, decay, environment, microorganism. 5) Competition, nutrients, plants, territory. 6) Abiotic, biotic, extinct, environment. 7) Acid rain, deforestation, environment, herbicide, landfill sites, pesticide, pollution, sewage, toxic. 8) Evolution, extinct, fossils, selective breeding, theory. 9) Asexual reproduction, characteristics, clone, cutting, gene, offspring, sexual reproduction, variety. 10) Characteristics, chromosomes, DNA, gene, genetic engineering, plasmid.
		Component 3 – Chemistry: Elements, Mixtures and Compounds	• Atoms, elements and compounds • How structure affects properties • Separating mixtures • Metals and alloys • Polymers	BY OUTCOME NUMBER: 1) Atom, boiling point, conduct, elements, melting point, metals, non-metals, Periodic Table. Strength. 2) Compound, equation, products, react, reaction, reactants, word equation. 3) Gas, kinetic theory, liquid, solid. 4) Carbon.

				5) Chromatography, crystallization, distillation, filtration, mixture. 6) Chromatography, solvent. 7) Unreactive, ore, recycle. 8) Alloy, aluminum, copper, corrosion, low density. 9) Alloy, carbon, iron, mixture, steels. 10) Biodegradable, incineration, landfill sites, microorganism, moulded, polythene, recycling.
		Component 4 – Chemistry: Chemistry in our World	• Reactions of acids • Energy and rate of reaction • Earth's atmosphere • Fuels and human impacts on the atmosphere • Water for drinking	BY OUTCOME NUMBER: 1) Acid, hydrochloric acid, hydrogen, reaction, salts, sulfuric acid. 2) Acid, alkali, base, carbon dioxide, carbonate, crystallised, limewater, neutralise. 3) Combustion, neutralisation, oxidation. 4) Catalyst, explosion, rusting. 5) Atmosphere, billion, photosynthesis. 6) Carbonates, fossil fuels, photosynthesis. 7) Compound, crude oil, distillation, fuel, fraction, fractional distillation, mixture, oil refinery, oilfield. 8) Burning, carbon monoxide, fossil fuels, global warming, greenhouse gases, soot. 9) Carbon dioxide, greenhouse gas. 10) Distillation, filtering, microbes, sterilising.
		Component 5 – Physics: Energy, Forces and the Structure of Matter	• Energy, energy transfers and energy resources • Forces and work • Speed and stopping distances • Atoms and nuclear radiation	BY OUTCOME NUMBER: 1) Chemical energy, elastic potential energy, energy, energy resource, energy store, kinetic energy store, thermal energy store, gravitational potential store. 2) Absorber, conductivity, dissipated, efficiency, emitter, insulation, lubrication, matt, radiation, shiny, thermostat. 3) Fossil fuels, generator, geothermal energy, hydroelectric, nuclear reactor, power station. Radioactive, renewable, solar cell, turbine. 4) Air resistance, electrostatic force, force, friction, gravitational force, magnetic force. 5) Work 6) Speed, distance, time 7) Braking distance, braking force, stopping distance, thinking distance. 8) Reaction, reaction time. 9) Tread. 10) Alpha particle, beta particle, emit, gamma ray, ionising radiation, nucleus, penetration, radioactivity, range.

		Component 6 – Physics: Electricity, Magnetism and Waves	• Electrical current • Domestic electricity • Magnetism and electromagnetism • Different types of waves • Electromagnetic waves	BY OUTCOME NUMBER: 1) component, current, resistance, voltage. 2) Alternating current, direct current, battery, cell. 3) Appliances, earth wire, flex, fuse, insulation, live wire, neutral wire. 4) Power. 5) Attraction, poles, repulsion. 6) Current, magnetic field, solenoid, electromagnet, relay. 7) Compression, longitudinal, oscillation, perpendicular, rarefaction, transverse. 8) Amplitude, frequency, wavelength. 9) Electromagnetic waves, gamma rays, infrared, microwave, radio, spectrum, ultraviolet, vacuum, visible light, x-rays. 10) Optical fibre, radar, reflection, satellite.