

Oswaldtwistle School **KS3 Science** Long Term Plan

YEAR 1	Topic/learning pathway	Keywords	Links to previous learning	Links to wider curriculum
AUTUMN 1	Introduction to science Baselines Recall Scientific method Making a hypothesis	Method, hypothesis, conclusion, evaluation, variable, predict, reproducible, reliable, anomaly, error		
AUTUMN 2	Forces Speed Gravity Matter Particle model Separating mixtures	Acceleration, air resistance, contact force, distance–time graph, driving force, equilibrium, field, friction, gravitational field strength, gravity/gravitational force, interaction pair, mass, newton, newton meter, relative motion, resistive force, resultant force, speed, weight, boiling point, change of state, chromatography, condense, density. Diffusion, dissolve, distillation, evaporate, filtrate, filtration, freeze, gas, gas pressure, liquid, melt, melting point, mixture, particle, property, pure substance, residue, saturated solution, solid, solubility curve, soluble (insoluble), solute, solution, solvent, states of matter, sublime, substance	KS2 Forces and surfaces, gravity/falling to earth, changes of state, heating and cooling on states	KS4 - Maths, Summer 1 –graphs and charts KS4 - Maths, Spring 1 – fractions, decimals and percentages. KS4 - Maths, Summer 1 – area, perimeter and volume
SPRING 1	Electromagnets Potential difference/resistance Current	Ammeter, amps, atoms, attract, battery, cell, charged up, current, electrical conductor, electrical insulator, electric charge, electric field, electron, electrostatic force, lightning, negatively charged, neutral, ohms, parallel, positively charged, potential difference, rating, repel, resistance, series, voltage, Voltmeter, volts		KS4 - Maths, Summer 1 –graphs and charts KS4 - Maths, Spring 1 – fractions, decimals and percentages. KS4 - Maths, Summer 1 – area, perimeter and volume
SPRING 2	Organisms Movement Cells	Amoeba, antagonistic muscle pair, bone, cell membrane, cell wall, chloroplast, circulatory system, concentration, cytoplasm, digestive system, euglena, flagellum, immune system, joints, leaf cell, ligaments, microscope, mitochondria, multi-cellular (organism), muscular skeletal system, nerve cell, nucleus, organ, organ system, red blood cell, reproductive system, respiration, respiratory system, root hair cell, skeleton, specialised cell, sperm cell, structural adaptations (of cells) tendons, tissue, uni-cellular (organism), vacuole	KS2 Muscles, skeleton, nerves	KS3 – PSHE, Autumn 2 – healthy eating KS4 - Maths, Summer 1 – graphs and charts PE, Spring 1 – exercise and the body

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<p>SUMMER 1</p>	<p>Energy Energy cost Energy transfer</p>	<p>chemical energy store, dissipation (dissipated), elastic energy store, energy, energy resource, fossil fuel, gravitational potential energy store, joule, kilojoule, kilowatt, kilowatt hour, kinetic energy store, law of conservation of energy, non-renewable, power, renewable, thermal energy store, watt</p>	<p>KS" Electricity, circuit symbols</p>	<p>KS4 - Maths, Summer 1 – graphs and charts KS4 - Maths, Spring 1 – fractions, decimals and percentages. KS4 - Maths, Summer 1 – area, perimeter and volume</p>
<p>SUMMER 2</p>	<p>Reactions Acids and alkalis Metals and non-metals Waves Sound Light</p>	<p>Acid, alkali, base, chemical reaction, concentration Corrosive, dilute, displace, displacement, element, indicator, irritant, litmus, metal, neutral, neutralisation, oxidation, oxide, Periodic table, pH scale, product, reactant, reactivity, reversible, salt, strong acid, thermite reaction, universal indicator, word equation, absorption, amplify, amplitude, angle of incidence, angle of reflection, auditory range, cochlea, concave, converging, convex, crest, decibel, diffuse reflection, dispersion, diverging, echo, eclipse, focal point, focus, frequency, hertz, incident ray, infrasound, inverted, longitudinal wave, luminous, medium, normal line, opaque, oscilloscope, ossicle, peak, photoreceptor, pitch, plane, primary colour, prism, refraction, spectrum, specular reflection, translucent, transparent, trough, ultrasound, vacuum, vibration, volume, wavelength</p>	<p>KS1 light and dark, reflections, shadows, sound vibrations, pitch, volume, distance and waves KS2 light in straight lines, reflection,</p>	<p>KS4 - Maths, Summer 1 –graphs and charts KS4 - Maths, Spring 1 – fractions, decimals and percentages. KS4 - Maths, Summer 1 – area, perimeter and volume</p>

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YEAR 2	Topic/learning pathway	Keywords	Links to previous learning	Links to wider curriculum
AUTUMN 1	<p>Ecosystems Interdependence Plant reproduction</p>	Anther, bioaccumulation, carpel, community, competition, consumer, decomposer, ecosystem, environment, fertilisation, filament, food chain, food web, germination, habitat, interdependence, niche, ovary, ovule, petal, pollen, pollination, population, predator, prey, producer, seed, seed dispersal, sepal, stamen, stigma, style	<p>KS1 Naming plants, basic structure of plants, Identifying animal kingdoms (birds, mammals etc) and groups (herbivore etc), plant requirements (light, water CO₂), All living things have babies, Simple food chains, food sources, KS2 Plant requirements (nutrients), variation between plants and needs, life cycles seed dispersal, Predator/prey, constructing food chains,</p>	KS3 – Art, Summer 1 /2 – our environment
AUTUMN 2	<p>The earth Earth structure Universe</p>	artificial satellite , asteroid, axis, ceramic, constellation, core, crust, day, deposition, durable, dwarf planet, Earth, erosion, exoplanet, galaxy, geocentric model, heliocentric model, igneous rock, lava, light year, magma, mantle, metamorphic rock, Milky Way, mineral, Moon, natural satellite, night, obsidian, orbit, phases of the Moon, planet, porous, rock cycle, season, sediment, sedimentary rock, Solar System, star, strata, Sun, transport, Universe, uplift, weathering, year	<p>KS1 seasonal changes, weather KS2 Rocks, materials, sun, earth and moon movements, day and night, axis rotation</p>	<p>KS4 - Maths, Summer 1 –graphs and charts KS4 - Maths, Spring 1 – fractions, decimals and percentages. KS4 - Maths, Summer 1 – area, perimeter and volume</p>
SPRING 1	<p>Genes Variation Human reproduction</p>	Adaptation, adolescence, amniotic fluid, cervix, cilia, condom, continuous variation, contraception, contraceptive pill, discontinuous variation, egg cell, ejaculation, embryo, environmental variation, fertilisation, foetus, gamete, gestation, implantation, inherited variation, menstrual cycle (period), menstruation , ovary, oviduct (fallopian tube), ovulation, penis, placenta, puberty, reproductive system, scrotum, semen, sex hormone, sexual intercourse, species, sperm cell, sperm duct, testicles (testes), umbilical cord, urethra, uterus (womb), vagina, variation	<p>KS1 All living things have babies KS</p>	<p>KS3 – PSHE, Summer 1 – contraception KS3 – PSHE, Autumn 2 -puberty</p>

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<p>SPRING 2</p>	<p>Forces Contact forces Pressure Matter Elements Periodic table</p>	<p>atmospheric pressure, centre of gravity, centre of mass, compression, contact force, deformation, drag force, elastic limit, equilibrium, extension, fluid, friction, gas pressure, Hooke's Law, incompressible, law of moments, linear relationship, liquid pressure, lubrication, moment, newton, newton metres, Newtons per metre squared, pivot, pressure, reaction, streamlined, stress, tension, up thrust, water resistance, alkali metals, atom, carbonate, chemical formula, chemical properties, chemical symbol, compound, element(s), group, halogen, hydroxide, molecule, natural polymer, nitrate (chemistry), noble gases, period, Periodic table, physical properties, polymer, sulphate, synthetic polymer, trend, unreactive</p>	<p>KS2 Magnets and contact forces</p>	<p>KS4 - Maths, Summer 1 –graphs and charts KS4 - Maths, Spring 1 – fractions, decimals and percentages. KS4 - Maths, Summer 1 – area, perimeter and volume</p>
<p>SUMMER 1</p>	<p>Electromagnets Magnetism electromagnetism</p>	<p>circuit breaker. core (electromagnet), electric bell, electromagnet, loudspeaker, magnet, magnetic field, magnetic field lines, magnetic force, magnetic poles, magnetise, permanent magnet, solenoid</p>	<p>KS2 Attract and repel</p>	<p>KS4 - Maths, Summer 1 –graphs and charts KS4 - Maths, Spring 1 – fractions, decimals and percentages. KS4 - Maths, Summer 1 – area, perimeter and volume</p>
<p>SUMMER 2</p>	<p>Organisms Breathing Digestion</p>	<p>Addiction, alcoholic, alveolus, anus, asthma, balanced diet, Bile, breathing. Bronchiole, bronchus, carbohydrase, carbohydrate, catalyst, condense, contract, deficiency, depressant, diaphragm, dietary fibre, digestion, digestive system, drug, enzyme, ethanol, exhale, food test, gas exchange, gullet, gut bacteria, hypothesis, inhale, large intestine, lipase, lipid, lungs, lung volume, malnourishment, medicinal drug, mineral (biology), nutrient, obese, passive smoking, protease, protein, recreational drug, rectum, respiration, respiratory system, ribs, small intestine, starvation, stimulant, stomach, trachea, unit of alcohol, villi, vitamin, withdrawal symptoms</p>	<p>KS1 Naming body parts, linking organs to senses, KS2 Breaking down food for energy, use of different teeth, function of heart/blood vessels, nutrient transport systems, nutrition, changes through age in humans, impact of diet/drugs on health</p>	<p>KS3 – PSHE, Autumn 2 – healthy eating KS4 - Maths, Summer 1 – graphs and charts PE, Spring 1 – exercise and the body</p>

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YEAR 3	Topic/learning pathway	Keywords	Links to previous learning	Links to wider curriculum
AUTUMN 1	<p>Energy</p> <p>Work</p> <p>Heating and cooling</p> <p>Reactions</p> <p>Types of reaction</p> <p>Chemical energy</p>	<p>Conduction, convection, convection current, deform, displacement, infrared radiation, input force, lever, output force, Radiation, simple machine, temperature, thermal conductor, thermal energy store, thermal imaging camera, thermal insulator, thermometer, work, balanced symbol equation, catalyst, catalytic converter, chemical bond, chemical reaction, Combustion, conservation of mass, conserved, decomposition, endothermic reaction, energy level diagram, exothermic reaction, fossil fuel, fuel, non-renewable, physical change, products, reactants, renewable, thermal decomposition</p>	<p>KS2</p> <p>Reversible and irreversible reactions,</p>	<p>KS4 - Maths, Summer 1 –graphs and charts</p> <p>KS4 - Maths, Spring 1 – fractions, decimals and percentages.</p> <p>KS4 - Maths, Summer 1 – area, perimeter and volume</p>
AUTUMN 2	<p>Waves</p> <p>Wave effect</p> <p>Wave properties</p>	<p>Compression, electromagnetic spectrum, gamma rays, infrared (IR) (radiation), ionisation, longitudinal wave, loudspeaker, microphone, microwaves, pressure wave, radio waves, rarefaction, superpose, transmission, transverse wave, ultrasound, ultraviolet (UV), visible light, wave, X-rays</p>		<p>KS4 - Maths, Summer 1 –graphs and charts</p> <p>KS4 - Maths, Spring 1 – fractions, decimals and percentages.</p> <p>KS4 - Maths, Summer 1 – area, perimeter and volume</p>
SPRING 1	<p>Ecosystems</p> <p>Respiration</p> <p>Photosynthesis</p>	<p>aerobic respiration, algae, anaerobic respiration, biotechnology, chlorophyll, deficiency, fermentation, fertiliser, haemoglobin, iodine, magnesium, nitrates (biology), oxygen debt, phosphates, photosynthesis, plasma, potassium, producer, stomata</p>	<p>KS1</p> <p>Plant requirements (light, water CO₂)</p> <p>KS2</p> <p>Plant requirements (nutrients), variation between plants and needs, life cycles seed dispersal,</p>	<p>KS3 – Art, Summer 1 /2 – our environment</p>
SPRING 2	<p>The earth</p> <p>Climate</p> <p>Earth’s resources</p>	<p>Atmosphere, carbon cycle, carbon sink, climate change, combustion, electrolysis, extraction, fossil fuel, global warming, greenhouse effect, greenhouse gas, mineral (chemistry), natural resources, ore, photosynthesis, recycling, respiration</p>	<p>KS2</p> <p>evaporation and condensation-water cycle</p>	<p>KS4 - Maths, Summer 1 –graphs and charts</p> <p>KS4 - Maths, Spring 1 – fractions, decimals and percentages.</p> <p>KS4 - Maths, Summer 1 – area, perimeter and volume</p>
SUMMER 1	<p>Genes</p> <p>Evolution</p> <p>inheritance</p>	<p>Allele, biodiversity, captive breeding, chromosome(s), competition, conservation, DNA, dominant (allele), endangered species, evolution, extinct, fossil, gene, gene bank, genetic modification, inherited characteristic(s), mutation, natural selection, peer review, population, Punnett square, recessive</p>	<p>KS1</p> <p>Recognising living and non-living, habitats of specific animals, basic life cycles</p> <p>Environmental changes pose threats, adaptations for habitat/survival – evolution, Classification, observable</p>	<p>KS3 – Art, Summer 1 /2 – our environment</p>

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			characteristics for classification, fossils-changes over time	
SUMMER 2	Summer exams			