

Science	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	<p><b>The cell</b> Animal cells, Plant cells, stem cells, specialised cells and microscopes</p> <p><b>Particle theory</b> The particle model, change of state, conservation of mass, stearic acid experiment, diffusion</p> <p><b>Energy</b> Systems, energy transfers, energy conservation, energy in food, energy comparisons, rate of energy transfer, electrical appliances and power, renewable and non-renewable energy sources, energy and environmental issues</p>	<p><b>Organisation 1</b> Examples of organisation, organ systems, joints and movement, chicken wing dissection, nervous system, digestive system and balanced diet</p> <p><b>The atom</b> The structure of the atom, subatomic particles</p>	<p><b>Organisation 2</b> Sexual and asexual reproduction, male and female reproductive organs, menstrual cycle, the journey of the sperm cell, fertilisation, the foetus and birth, Puberty</p> <p><b>The atom</b> The development of atomic models</p> <p><b>Forces 1</b> Types of forces, measuring force, Newton's second and third law, balanced and unbalanced forces, Resultant force, work done</p>	<p><b>Elements and the periodic table</b> Elements and compounds, representing elements and compounds, diagrams, the periodic table, metals and non-metals, the development of the periodic table</p> <p><b>Electricity and magnetism</b> Magnetism, magnetic fields, the earth's magnetic field, static electricity, investigating static charge</p>	<p><b>Electricity and magnetism</b> Building and drawing circuits, series and parallel circuits, energy in circuits, energy stores and pathways.</p> <p><b>Interdependence</b> Organisms in ecosystems, food chains and food webs, human impact, classification, evolutionary trees, adaptations</p>	<p><b>Separating mixtures</b> Different methods of separating mixtures</p> <p><b>Space</b> Scale of the universe, the solar system, discovering the solar system, our solar system, rotation and orbits, gravity</p>
Year 8	<p><b>Bioenergetics</b> Aerobic respiration in animals, anaerobic respiration in animals and yeast, investigation respiration</p> <p><b>Chemical reactions/acids and alkalis</b> Chemical and physical changes, understanding chemical reactions, writing chemical word equations, the pH scale, acids and alkalis, neutralisation reactions</p> <p><b>Forces 2</b> Newton's laws, speed, speed investigation, distance/time graphs,</p>	<p><b>Transport</b> Diffusion, the respiratory system, breathing, the effects of smoking, the heart and blood vessels, blood transfusions and transplants, transport in plants</p> <p><b>Electronic structure</b> Electron shells, electronic configuration</p> <p><b>Particle theory</b> Using particles to describe matter, understanding the concept of density, density calculations, pressure in solids and fluids, explaining why objects float, convection, conduction and radiation.</p>	<p><b>Organisation, Health and diseases</b> Introduction to diseases, spread of diseases, defending against diseases, culturing micro organisms</p> <p><b>Electronic structure: Atoms and bonding</b> Bonding introduction, ionic bonding, covalent bonding, metallic bonding</p>	<p><b>Organisation, Health and diseases</b> Vaccination, antibiotics, plant diseases, drugs and alcohol</p> <p><b>Energy changes and rates of reactions</b> Endothermic and exothermic reactions, exothermic reaction practical, energy profile diagrams, rate of reactions, surface area and rates, temperature, collision theory, concentration, activation energy and catalysts</p> <p><b>Electricity</b> Using analogies to explain simple circuits, resistance slowing down current, series circuit and Kirchhoff's current, parallel circuits and Kirchhoff's current.</p>	<p><b>Biodiversity</b> Introduction to ecology, biotic and abiotic factors, deforestation, global climate change, ecological sampling, problems with plastics</p> <p><b>Reactivity series</b> Metals and reactivity, metals and acids, reactivity and corrosion, displacement reactions, ores and metal extraction</p> <p><b>Electricity</b> Sensing circuit 1, sensing circuit 2, logic gates and binary, construction decision circuits with logic gates</p>	<p><b>Waves</b> Oscillations and transverse waves, longitudinal waves, sound waves, ultrasound, reflection, refraction, lenses and the eye</p>
Year 9	<p><b>Genetics</b> The gene, inheritance, selective breeding, cloning, Darwin's theory, natural selection, fossils</p> <p><b>Bonding, structure and properties</b> The periodic table and atomic structure, ionic bonding, electrolysis, metallic bonding, covalent bonding, molecules, giant covalent structure</p> <p><b>Forces 3</b> Moments and turning forces, Hooke's law, elasticity</p>	<p><b>Bioenergetics 2</b> Photosynthesis, tissues for photosynthesis, investigating photosynthesis, limiting factors, glucose</p> <p><b>Quantitative chemistry</b> Conservation of mass, chemical formulae balancing chemical equations, equations, relative atomic and formula mass, moles</p> <p><b>Cosmology</b> Life cycle of stars, Nuclear fusion, the expanding universe, the Big Bang</p>	<p><b>Key concepts in Biology</b> Microscopes, plant and animal cells, core practical on microscopes, specialised cells</p> <p><b>States of matter</b> Describing the three states of matter</p> <p><b>Methods of separating and purifying</b> Mixtures, filtration and crystallisation, paper chromatography, distillation, separation of inky water, drinking water</p> <p><b>Conservation of Energy</b> Energy stores and transfers Energy efficiency, keeping warm, soled energy, non-renewable resources, renewable resources</p>	<p><b>Key concepts in Biology</b> Inside bacteria, enzymes and nutrition, enzyme action, enzyme activity, core practical on pH and enzyme activity</p> <p><b>Structure of the atom</b> The structure of the atom, atomic number and mass number, isotopes</p> <p><b>Forces and Motion</b> Resultant force, Newton's First Law, Mass and weight, Newton's second law, Core practical, Newton's third law</p>	<p><b>Key concepts in Biology</b> Transporting substances, core practical, osmosis in potatoes</p> <p><b>Cells and Control</b> Mitosis, growth in plants, growth in animals</p> <p><b>Elements and the Periodic table</b> Elements and the periodic table, atomic number and the periodic table, electronic configurations, periodic table</p> <p><b>Ionic Bonding</b> Ionic Bonds, Ionic lattices, Properties of ionic compounds</p> <p><b>Forces and Motion</b> Momentum, Stopping distance, crash hazards</p> <p><b>Motion</b> Vector's and scalars, distance time graphs</p>	<p><b>Cells and Control</b> Stem cells, the nervous system, neurotransmission speeds#</p> <p><b>Covalent bonding</b> Formation of covalent bonds, examples</p> <p><b>Molecular Compounds</b> Examples of molecular compounds, allotropes of carbon, properties of metals, bonding models</p> <p><b>Motion</b> Acceleration, Velocity time graphs</p>
Year 10	<p><b>Genetics</b> Meiosis, DNA, DNA extraction and alleles</p> <p><b>Acids and alkalis</b> Acids, alkalis and indicators, looking at acids, bases and salts, core practical to make copper sulphate crystals</p> <p><b>Waves</b> Describing waves, wave speeds, core practical investigating waves, refraction</p>	<p><b>Genetics</b> Inheritance, gene mutation, variation</p> <p><b>Natural Selection and genetic modification</b> Evidence for human evolution, Darwin's theory</p> <p><b>Acids and alkalis</b> Alkalis and balancing equations, core practical investigating neutralisation, alkalis and neutralisation, reactions of acids with metals and carbonates, solubility</p> <p><b>Calculations involving masses</b> Masses and empirical formulae, conservation of mass, moles</p> <p><b>The EM spectrum</b> Electromagnetic waves, core practical investigating refraction, the electromagnetic spectrum, using long and short wavelengths, EM radiation dangers</p>	<p><b>Natural Selection and genetic modification</b> Classification, Breeds and varieties, genes in agriculture and medicines</p> <p><b>Health, Disease and development</b> Health and disease, non-communicable diseases, cardiovascular diseases, pathogens, physical and chemical barriers, the immune system, antibiotics</p> <p><b>Electrolytic process</b> Electrolysis, core practical on the electrolysis of copper sulphate using carbon and graphite rods</p> <p><b>Radioactivity</b> Atomic models, inside atoms, electrons and orbits, background radiation, types of radiation, radioactive decay, half-life, dangers of radioactivity</p>	<p><b>Plant structures and their functions</b> Photosynthesis, factors that affect photosynthesis, core practical on light intensity and photosynthesis</p> <p><b>Electrolytic process</b> Products from electrolysis</p> <p><b>Obtaining and using metals</b> The reactivity series, ores</p> <p><b>Energy, forces doing work, forces and their effects</b> Work and power, objects affecting each other, vector diagrams</p> <p><b>Astronomy (Separate science only)</b> The Solar System gravity and orbits, life cycles of stars, red shift, origin of the Universe</p>	<p><b>Plant structures and their functions</b> Absorbing water and minerals, transpiration and translocation</p> <p><b>Animal coordination, control and homeostasis</b> Hormones, Hormonal control of metabolic rate, the menstrual cycle</p> <p><b>Obtaining and using metals</b> Oxidation and reduction in metal extraction, life cycle assessment, recycling,</p> <p><b>Reversible reactions and Equilibra</b> Bending and stretching, core practical investigating springs, extension and energy transfer</p> <p><b>Electricity and circuits</b> Electrical circuits, current and potential difference, current, charge and energy, resistance</p> <p><b>Dynamic equilibrium calculations (Separate science only)</b> Fertilisers and the Haber process, factors affecting equilibrium</p> <p><b>Transition metals and alloys (Separate science only)</b> Transition metals, corrosion, electroplating, alloying, uses of metals and their alloys</p>	<p><b>Animal coordination, control and homeostasis</b> Hormones and the menstrual cycle, control and blood glucose, type 2 diabetes</p> <p><b>Reversible reactions and Equilibra</b> Dynamic equilibrium concept</p> <p><b>Groups in the periodic table</b> Group 1, group 7, halogen reactivity, group zero</p> <p><b>Electricity and circuits</b> More about resistance, core practical investigating resistance, transferring energy</p> <p><b>Quantitative analysis (Separate science only)</b> Yields, atom economy, concentrations, titrations and calculations</p> <p><b>Qualitative analysis (Separate science only)</b> Flame tests and photometry, Tests for positive ions, Tests for negative ions</p> <p><b>Chemical cells and fuel cells (Separate science only)</b> Chemical cells and fuel cells</p> <p><b>Static electricity (Separate science only)</b> Charges and static electricity, uses and dangers of static electricity, electric fields</p>
Year 11	<p><b>Exchange and transport in animals</b> Efficient transport and exchange, the circulatory system</p> <p><b>Rates of reactions</b> Determining rates of reactions, factors affecting reaction rates, core practical on investigating reaction rates</p> <p><b>Electricity and circuits</b> Power, transferring energy by electricity, electrical safety</p> <p><b>Magnetism and the motor effect/electromagnetic induction</b> Magnets and magnetic fields, electromagnetism, magnetic forces</p>	<p><b>Exchange and transport in animals</b> The heart, cellular respiration, core practical on respiration rates</p> <p><b>Ecosystems and material cycles</b> Ecosystems, abiotic factors and communities, core practical on quadrats and transects</p> <p><b>Rates of reactions</b> Catalysts and activation energy, exothermic and endothermic reactions, energy changes in reactions.</p> <p><b>Magnetism and the motor effect/electromagnetic induction</b> Transformers, Transformers and energy</p> <p><b>Particle model</b> Particles and density Core practical investigating density</p>	<p><b>Ecosystems and material cycles</b> Biotic factors and communities, parasitism and mutualism, biodiversity and humans, preserving biodiversity</p> <p><b>Fuels</b> Hydrocarbons in crude oil, fractional distillation of crude oil, the alkane homologous series, complete and incomplete combustion, combustible fuels and pollution, breaking down hydrocarbons</p> <p><b>Particle model</b> Energy and changes of state, energy calculations</p> <p><b>Polymers (Separate science only)</b> Addition polymerization, polymer properties and uses, condensation polymerization, problems with polymers</p> <p><b>Alcohols and carboxylic acids (Separate science only)</b> Ethanol production, alcohols, carboxylic acids</p>	<p><b>Ecosystems and material cycles</b> The water cycle, the carbon cycle, the nitrogen cycle</p> <p><b>Earth and atmospheric sciences</b> The early atmosphere, the changing atmosphere, the atmosphere today, climate change</p> <p><b>Particle model</b> Core practical investigating water, gas temperature and pressure</p> <p><b>Bulk and surface properties (Separate science only)</b> Comparing properties of materials, comparing uses of materials, nanoparticles</p>	<p><b>Exams</b></p>	<p><b>Exams</b></p>