



Curriculum Overview: Combined Science Year group 10

What your child will learn each half term

This overview shows the key topics, skills, and knowledge your child will be learning in Science across in Y10. It helps families understand what's being taught, how it builds on previous learning, and how you can support your child at home.

• **How science works skills**

- Use and rearrange equations confidently in Chemistry and Physics topics.
- Link graphs and data to scientific models, drawing conclusions from evidence.
- Develop skills in planning, carrying out, and analysing required practicals.
- Apply practical skills: selecting equipment, measuring accurately, and identifying variables to control in an investigation.
- Communicate scientific ideas clearly in extended written answers, using correct terminology.

- **What we are learning:** The topic or focus for the half term.
- **Key knowledge & skills:** What students should understand and be able to do.
- **How we assess learning:** knowledge checks, practical tasks, written responses and formal assessments.
- **Key words to know:** Vocabulary students will learn and use.

Half term	What we are learning	Key knowledge and skills	How we will assess learning in this unit	Homework	Key vocabulary for this unit
HT 1 and 2	B1a Cell biology B1b Cell division and stem cells B2a Organisation and the digestive system B2b Organising animals and plants C1a Atomic Review C1b Periodic Table C2 Bonding and Structure P1a Conservation and dissipation P1b Energy transfers by heating recap	Cell biology (B1a): structure and function of plant/animal cells, use of microscopes, transport by diffusion, osmosis, and active transport. Cell division & stem cells (B1b): mitosis, cell cycle, stem cells in medicine, ethical considerations. Organisation & digestive system (B2a): structure of digestive system, role of enzymes, effect of temperature and pH. Organising animals & plants (B2b): structure of the heart, blood vessels, blood components, transport in plants (xylem and phloem). Atomic review (C1a): structure of the atom, protons, neutrons, electrons, isotopes, ions. Periodic table (C1b): groups and periods, properties of Group 1, 7, and 0, Mendeleev's contribution. Bonding & structure (C2): ionic, covalent, metallic bonding, properties linked to structure, giant lattices.	Continuous formative assessment in lessons. End of topic tests. Question level analysis and feedback. Required practical assessment booklets.	Homework is set on a Monday and is due the following Monday. Homework will be set online using a website 'Educake' which pupils will receive their login details for.	Biology: cell, nucleus, cytoplasm, mitochondria, chloroplast, prokaryote, eukaryote, magnification, diffusion, osmosis, active transport, mitosis, stem cell, enzyme, substrate, bile, artery, vein, capillary, plasma, red blood cell, xylem, phloem. Chemistry: atom, proton, neutron, electron, isotope, ion, periodic table, group, period, alkali metal, halogen, noble gas, ionic bond, covalent

	<p>P1c Energy resources</p> <p>P2a Electric Circuits</p>	<p>Conservation & dissipation of energy (P1a): law of conservation of energy, energy stores and transfers, efficiency.</p> <p>Energy transfers by heating (P1b): conduction, convection, radiation, insulation.</p> <p>Energy resources (P1c): renewable vs. non-renewable, advantages and disadvantages, environmental impact.</p> <p>Electric circuits (P2a): current, potential difference, resistance, series and parallel circuits, Ohm's Law.</p>			<p>bond, metallic bond, lattice, conductivity.</p> <p>Physics: energy store, conservation, dissipation, efficiency, conduction, convection, radiation, insulation, renewable, non-renewable, current, voltage, resistance, Ohm's law, series circuit, parallel circuit, power.</p>
HT 3 and 4	<p>B3a Communicable Diseases</p> <p>B3b Preventing and treating disease</p> <p>B4a Photosynthesis</p> <p>B4b Respiration</p> <p>C3 Quantitative Chemistry</p> <p>P2b Electricity and the home</p> <p>P4 Radioactivity</p>	<p>B3a Communicable Diseases</p> <p>Types of pathogens and how they spread.</p> <p>Examples of common diseases.</p> <p>How the body defends itself.</p> <p>B3b Preventing and Treating Disease</p> <p>How vaccines work.</p> <p>Use of antibiotics and issues like resistance.</p> <p>How new medicines are tested.</p> <p>B4a Photosynthesis</p> <p>Photosynthesis equation.</p> <p>Factors that affect the rate.</p> <p>How plants use glucose.</p> <p>B4b Respiration</p>	<p>Continuous formative assessment in lessons.</p> <p>End of topic tests.</p> <p>Question level analysis and feedback.</p> <p>Required practical assessment booklets.</p>	<p>Homework is set on a Monday and is due the following Monday. Homework will be set online using a website 'Educake' which pupils will receive their login details for.</p>	<p>Biology Keywords</p> <p>Pathogen, Bacteria, Virus, Fungi, Protist, Transmission, Infection, Immune system, Symptoms, Health, Vaccine, Immunity, Antibiotic, Painkiller, Resistance, Clinical trials, Placebo, Double-blind, Dose, Chlorophyll, Glucose, Oxygen, Carbon dioxide, Light intensity, Limiting factor, Starch, Chloroplast, Aerobic, Anaerobic, Energy, Lactic acid, Oxygen debt, Exercise, Muscle fatigue.</p> <p>Chemistry Keywords</p>

		<p>Aerobic and anaerobic respiration.</p> <p>Effects of exercise on the body.</p> <p>Energy released for cell processes.</p> <p>C3 Quantitative Chemistry</p> <p>Conservation of mass.</p> <p>Relative formula mass and moles.</p> <p>Basic calculations with mass, moles and concentration.</p> <p>P2b Electricity and the Home</p> <p>Power and energy in electrical appliances.</p> <p>UK mains electricity.</p> <p>Plugs, fuses and household safety.</p> <p>P4 Radioactivity</p> <p>Types of radiation and their properties.</p> <p>Half-life and radioactive decay.</p> <p>Safety and uses of radioactive materials.</p>			<p>Conservation of mass, Relative formula mass (Mr), Mole, Avogadro, Concentration, Yield, Atom economy.</p> <p>Physics Keywords</p> <p>Power, Voltage, Current, Resistance, Fuse, Earth wire, Live wire, Neutral wire, National Grid, AC, Alpha, Beta, Gamma, Ionising, Half-life, Decay, Nucleus, Contamination, Irradiation.</p>
HT 5 and 6	<p>B3c non-communicable diseases</p> <p>B5a The human nervous system</p> <p>B5b Hormonal coordination</p> <p>C4a Chemical change</p> <p>C4b Electrolysis</p>	<p>B3c Non-Communicable Diseases: Risk factors (lifestyle, genetics), effects of diet, smoking, alcohol, disease links (e.g., heart disease, cancer). Interpret data on lifestyle vs disease, evaluate health advice.</p> <p>B5a The Human Nervous System: Structure of the nervous system (CNS, PNS), neurons, reflex arcs, electrical impulses. Draw and label reflex arcs, explain nerve responses, interpret reaction time data.</p> <p>B5b Hormonal Coordination: Endocrine glands, hormones (insulin, adrenaline, thyroxine), feedback</p>	<p>Continuous formative assessment in lessons.</p> <p>End of topic tests.</p> <p>Question level analysis and feedback.</p> <p>Required practical assessment booklets.</p>	<p>Homework is set on a Monday and is due the following Monday. Homework will be set online using a website 'Educake' which pupils</p>	<p>Biology</p> <p>Non-communicable, Lifestyle, Risk factor, Genetics, Heart disease, Cancer, Obesity, Diabetes, Neuron, CNS, PNS, Reflex, Synapse, Impulse, Reaction time,</p>

	<p>C5 Energy changes</p> <p>P3 Molecules and matter</p> <p>P5a Forces in balance</p>	<p>mechanisms. Compare nervous vs hormonal control, explain hormone effects, interpret graphs.</p> <p>C4a Chemical Change: Reactivity series, acids and metals, neutralisation, pH, precipitation reactions. Predict reactions, balance equations, identify products.</p> <p>C4b Electrolysis: Electrolytes, ions, electrodes, products of electrolysis. Predict products, write half-equations, use diagrams of electrolysis cells.</p> <p>C5 Energy Changes: Exothermic vs endothermic reactions, energy profile diagrams, bond energy. Draw and interpret energy diagrams, calculate energy change from bonds.</p> <p>P3 Molecules and Matter: States of matter, particle model, density, gas pressure, changes of state. Calculate density, interpret particle diagrams, explain pressure changes.</p> <p>P5a Forces in Balance: Types of forces, resultant forces, moments, levers, equilibrium. Draw force diagrams, calculate resultant forces, apply moments formula.</p>		<p>will receive their login details for.</p>	<p>Hormone, Gland, Insulin, Adrenaline, Thyroxine, Feedback, Endocrine.</p> <p>Chemistry</p> <p>Reactivity, Acid, Alkali, Neutralisation, pH, Precipitate, Electrolyte, Electrode, Ion, Anode, Cathode, Half-equation, Exothermic, Endothermic, Energy profile, Bond energy.</p> <p>Physics</p> <p>State, Particle, Density, Pressure, Volume, Temperature, Force, Resultant, Moment, Lever, Equilibrium, Balanced, Unbalanced.</p>