

Different classes may follow different routes through the topics. 7U2, 7U3 and 7U4 can be taught in any order, but must be covered before 7U5, 7U6 and 7U7.

	Autumn 1				Autumn 2					Spring 1					Spring 2					Summer 1				Summer 2														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
7	7U1 Intro to science				7U2 Cells and systems					7U3 Atoms, elements, compounds, and mixture					7U4 Forces					7U5 Ecology					7U6 Acids and alkalis				7U7 Light and sound					Buffer				
	How science works, safety, units measurements an scales, scientific method (variables, conclusions etc,,)				Scientific content pupils will learn about... Animal cells, specialised animal cells, plant cells, specialised plant cells and tissues, cell models, human systems (skeletal, muscular, circulatory, respiratory, digestive, nervous and reproductive), linking to effect of exercise menstrual cycle, pregnancy and birth, and plant reproduction					Scientific content pupils will learn about... Particle model and states of matter, changes of state, atomic structure, periodic table, properties of metals and non-metals, chemical analysis including flame tests, testing for purity, chromatography, filtration and distillation and applications of chemistry					Scientific content pupils will learn about... Balanced and unbalanced forces (resultant forces), speed, distance time graphs, gravity, friction, power, levers, moments, pressure, water pressure, density, floating and sinking, magnetism and electromagnetism					Scientific content pupils will learn about... Classification, animal adaptations, extremophiles, food chains, food webs, interdependence, investigating distribution of organisms					Scientific content pupils will learn about... pH scale, evaluating indicators, making salts (neutralisation reactions), evaluating antacids (application of neutralisation)				Scientific content pupils will learn about... Sounds (amplitude, frequency and wavelength), hearing ranges, evaluating sound proofing materials, speed of light and sound, visible spectrum, colour and filters, reflection, uses of reflection and refraction									

Different classes may follow different routes through the topics. Subjects must be taught in order (cells and systems before variation etc..)

	Autumn 1				Autumn 2					Spring 1					Spring 2					Summer 1				Summer 2														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
8	Introduction to science				Cells and systems					Acids and alkalis					Energy and Electricity					Variation					Earth and Atmosphere				Light and sound									
					Scientific content pupils will learn about... Animal cells, specialised animal cells, plant cells, specialised plant cells and tissues, cell models, human systems (skeletal, muscular, circulatory, respiratory, digestive, nervous and reproductive), linking to effect of exercise menstrual cycle, pregnancy and birth, and plant reproduction					Scientific content pupils will learn about... pH scale, evaluating indicators, making salts (neutralisation reactions), evaluating antacids (application of neutralisation)					Scientific content pupils will learn about... Energy stores and transfers, conduction, convection, radiation, generating electricity, coal fired power station, renewable energy, electromagnetic induction, electrochemical cells, simple circuits, investigating simple circuits, current in series and parallel, potential difference in series and parallel, resistance and static electricity					Scientific content pupils will learn about... Variation, investigating variation, structure of DNA, history of DNA (Watson, Crick and Franklin), natural selection, extinction, selective breeding, cloning and gene banks					Scientific content pupils will learn about... Structure of the Earth, the restless earth, igneous rocks, sedimentary rocks, metamorphic rocks, and the rock cycle, investigating rock types, Earth's atmosphere, carbon cycle including the evolution of the atmosphere, complete and incomplete combustion, environmental impact of combustion, carbon footprints, plastic pollution including the properties and uses of polymers				Scientific content pupils will learn about... Sounds (amplitude, frequency and wavelength), hearing ranges, evaluating sound proofing materials, speed of light and sound, visible spectrum, colour and filters, reflection, uses of reflection and refraction									

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Year 9 is a transition year between the Key Stage 3 curriculum and the start of the GCSE course. Different classes may follow different routes through the topics. 9B1, 9C1 and 9P1 can be taught in any order, but must be covered before 9B2, 9C2 and 9P2. Due to the interruption in learning (COVID) some content has been moved up from Year 8 and will be covered in Year 9.

	Autumn 1							Autumn 2						Spring 1					Spring 2					Summer 1					Summer 2										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
9/1	Moved up from Year 8: Selective breeding, cloning and genetic engineering. 9B1: Cells (division, specialised, stem), organs, pathogens (viruses, bacteria, fungi, malaria), human defence, antibiotics, vaccinations, developing drugs, enzymes theory (function).							Moved up from Year 8: Electrochemical cells (batteries) / smart materials (nanoscience / smart alloys). 9C1: Atom (history, structure, isotopes), electron configuration, noble gases, halogens, alkali metals, transition metals, separation techniques, acids, bases.						9P1: Energy stores, transfers (conduction, convection) kinetic energy, work and power, density, sources of energy, reducing heat loss from the home, efficiency					9B2: Photosynthesis including limiting factors, respiration (aerobic anaerobic), effect of exercise, circulation, blood vessels and blood, heart disease, metabolism					Moved up from Year 8: Thermochromic materials / photochromic materials. 9C2: Endo exo thermic reactions, oxidation and reduction, neutralisation, formula mass, atmosphere (composition, global warming, diming, human activity), combustion					Moved up from Year 8: Invention of electricity (electromagnetic induction) / circuits basics / circuit components / current in series and parallel / potential difference in series and parallel / electrical resistance. 9P2: Change of state, specific heat capacity and latent heat, particle motion, current, potential difference, resistance, application of electricity and domestic electricity										



	Autumn 1								Autumn 2								Spring 1								Spring 2								Summer 1								Summer 2							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39									
10B	Diffusion, osmosis, active transport, exchange surfaces, transpiration and translocation, digestive system and enzymes, respiratory system, culturing microbes, monoclonal antibodies, plant disease, plant response . Paper 1 assessment																Adaptations in plants and animals, competition, food chains and webs, predator-prey cycles, pyramids of biomass, water cycle, carbon cycle, decay, decomposers, deforestation, global warming, biodiversity, intensive farming methods, sustainable food production, biotic and abiotic factors, sampling techniques																															
10C	Conservation of mass, symbol equations, formula mass, uncertainty, the mole, reacting masses, balancing equations, limiting factors, concentration, percentage yield, volume of gases, oxidation and reduction, displacement reactions, oil-rig, neutralisation, soluble salts, acids, alkalis, neutralisation, strong and weak acids, titrations, electrolysis, exo/endo thermic reactions, temperature and rate, reaction profiles and energy levels, calculating energy of reactions, making electricity from chemicals Paper 1 assessment																Collision theory, effects of temperature, volume, surface area, concentration and catalysts on rate of reaction. Reversible reactions, Le Chanteller's principle and pressure, fractional distillation, alkanes, cracking hydrocarbons, alkenes, properties of hydrocarbons, fermentation, alcohols and carboxylic acids, addition polymerisation, condensation polymerisation, amino acids, proteins and DNA																															
10P	10P1: Models of the atoms and atomic structure, radioactive decay, half-life, contamination and irradiation, back ground radiation, fission and fusion. Paper 1 assessment. Scale and vector quantities, speed and acceleration, graphing motion, resultant forces																10P2: Forces and acceleration, gravity, terminal velocity, stopping distance, momentum, extension and compression of a spring, moments and gears, atmospheric and fluid pressure. Assessment of Forces unit 5. Types of wave and characteristics, speed of sound, reflection and refraction																															
10	Diffusion, osmosis, active transport, exchange surfaces, transpiration and translocation, digestive system and enzymes, respiratory system, Paper 1 assessment								10C1: Covalent bonding (structure and properties), allotropes of carbon, ionic bonding (structure and properties), metallic bonding, redox reaction, electrolysis, energy of reactions, uncertainty, the mole, limiting factors concentration, conservation of mass								10P1: Models of the atoms and atomic structure, radioactive decay, half-life, contamination and irradiation Paper 1 assessment. Scale and vector quantities, speed and acceleration, graphing motion, resultant forces								Adaptations in plants and animals, competition, food chains and webs, predator-prey cycles, water cycle, carbon cycle, decomposers, deforestation, global warming, biodiversity, biotic and abiotic factors, sampling techniques								10C2: Collision theory, effect of concentration, temperature, surface area and catalysts, reversible reactions, purity, formulations, chromatography, gas tests, flame tests, fractional distillation, alkanes, cracking alkanes, alkene, properties of hydrocarbons, resources, water treatment, corrosion vs rusting, metals and alloys, environmental impact of raw materials								10P2: Forces and acceleration, gravity, terminal velocity, stopping distance, momentum, extension and compression of a spring. Assessment of Forces unit 5 Types of wave and characteristics, speed of sound, reflection and refraction							



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11B	Contraception, IVF, negative feedback, kidney, blood glucose, DNA, protein synthesis, meiosis, variation, sexual and asexual reproduction, inheritance, disorders, genetic engineering, selective breeding, cloning, speciation, evolution, classification, fossils, extinction Paper 2 assessment																					GCSE REVISION PROGRAMME							GCSE EXAMS											
11C	Purity, formulations, chromatography, gas and flame tests, cations and anions, instrumental methods and chemical methods, composition of the atmosphere, carbon sinks, global warming, impact of human activity, complete and incomplete combustion, using resources, water treatment, bioleaching and phytomining, corrosion vs rusting, metals and alloys, environmental impact of raw materials, polymers, Haber process, salt of the Earth Paper 2 assessment																																							
11P	Forces and motion: Speed, velocity, distance time graphs, velocity time graphs, resultant forces and vector diagrams, newtons laws of motion, investigating acceleration, contact and non-contact forces, gravity, terminal velocity, stopping distance, momentum, investigating the extension of a spring, moments and gears, atmospheric and fluid pressure. Magnetism and electromagnetism: magnets, magnetic fields, electromagnets, motors, speakers, microphones, electromagnetic induction, transformers, solar system, redshift, big bang, life cycle of stars. Paper 2 assessment																																							
11/1	Variation, genetics and evolution: DNA, meiosis, variation, sexual and asexual reproduction, inheritance, disorders, genetic engineering, selective breeding, evolution, classification, fossils, extinction Paper 2 assessment				Chemical reactions Acids, alkalis, neutralisation, making salts, equations, reacting masses, organic chemistry, quantitative chemistry, qualitative chemistry, ionic equations, electrolysis equations Paper 2 assessment				Forces and motion: Speed, velocity, distance time graphs, velocity time graphs, resultant forces and vector diagrams, newtons laws of motion, investigating acceleration, contact and non-contact forces, gravity, terminal velocity, stopping distance, momentum, investigating the extension of a spring. Magnetism and electromagnetism: magnets, magnetic fields, electromagnets, motors. Paper 2 assessment									GCSE REVISION PROGRAMME							GCSE EXAMS															

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	Autumn 1							Autumn 2							Spring 1					Spring 2					Summer 1					Summer 2													
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12B	Unit 1 Biological molecules: Carbohydrate, lipids, proteins, enzyme action, factors affecting enzyme action, DNA and RNA, DNA replication, water, ATP, inorganic ions							Unit 2 Cells and immunity: Eukaryotic cell, organelles, prokaryotic cells, viruses, cell components, mitosis, membrane structure, diffusion, osmosis, active transport							Unit 4 DNA and classification: DNA, genes, chromosomes, RNA, protein synthesis, nucleic acids, meiosis, genetic variation, mutation, genetic diversity, natural selection, classification of organisms, selection, DNA technology, classification, diversity, variation, biodiversity					Unit 3 Exchange and transport: Surface area, gas exchange (humans and others), effects of lung disease, digestion and absorption, haemoglobin, circulatory system, heart, cardiovascular disease, transport in plants (xylem and phloem)					Start of 13 work / buffer time																		
12C	Physical Chemistry: Atomic structure, amount of substances, energetics, redox, Bonding and Kinetics (WJ1)							Organic Chemistry: Introduction to organic chem, alkanes, halogenalkanes							Inorganic Chemistry: Group 2, group 7 and periodicity					Organic Chemistry: Alkenes, alcohols and organic analysis																							
12P	Unit 1 / 2 Particles: Atomic structure, stable and unstable nuclei, antiparticles and photons, hadrons and leptons, strange particles and conservation of properties, quarks and antiquarks, particle interactions, photoelectric effect, energy levels in atoms, wave-particle duality							Unit 6 Mechanics and materials: Scalar, vector, linear motion, acceleration, motion graphs, free fall and terminal velocity, moments, stability, centre of mass, Newton's laws, conservation of momentum, momentum and safety, collisions and explosions, work, power, energy conservation, efficiency, density, strain, stress, tension, stored elastic energy, Youngs modulus							Unit 7 Electricity: Circuits, current, potential difference, resistance, IV characteristics, resistivity, determine the resistivity of a wire, power and electrical energy, e.m.f. and internal resistance, conservation of energy, charge in circuits, potential divider					Unit 3 Waves: Progressive waves, transverse and longitudinal, wave speed, polarisation, superposition, stationary waves, interference (single source and double), diffraction (diffraction gratings), refraction, reflection, refractive index, resonance, critical angle, optical fibres, total internal reflection, dispersion and attenuation																							

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13B	Unit 5 photosynthesis and respiration: photosynthesis, respiration, ATP, limiting factors, aerobic respiration, energy transfer in ecosystems, farming practices and production, fertilisers and eutrophication								Unit 8 Gene expression: Mutation, cancer, stem cells, transcription, translation, epigenetic control of gene expression, phenotypes, genome projects, DNA fragments, amplifying DNA, recombinant DNA technology, gene probes, medical diagnosis, genetic finger printing								A Level Revision														A Level Exams													
	Unit 7 genetics: Inheritance, linkage and epistasis, chi-squared test, hardy-Weinberg principle, variation and selection, speciation and genetic drift, ecosystems, variation in population size, investigating populations, succession, conservation								Unit 6 stimuli and response: nervous communication, response in plants and animals, receptors, control of heart rate, neurones, synaptic transmission, muscle contraction, homeostasis, control of blood sugar, kidneys, control of water potential																																			
13C	Physical Chemistry: thermodynamics, acids and bases, electrode potential and electrochemical cells, rates equations (WJII)								Inorganic Chemistry: transition metals, reactions of ions in aqueous solutions, properties of period 3 elements and their oxides. Equilibrium constant K _p for homogeneous system.																																			
	Organic Chemistry: optical isomerism, aldehydes and ketones, carboxylic acids,								Organic Chemistry: Aromatic Chemistry, amines, polymers, amino acids, proteins and DNA, nuclear magnetic resonance spectroscopy, chromatography and organic synthesis.																																			
13P	Fields: Electric fields, electric potential. Comparison of fields Capacitance: Capacitors, energy stored, dielectrics, charge and discharge, Magnetic fields: Magnetic flux density, force on a wire, charged particles, electromagnetic induction, flux linkage, Faraday's and Lenz's laws, alternating current, transformers								Nuclear Physics: Rutherford's scattering experiment, nuclear radius and density, properties of nuclear radiation, background radiation and intensity, law of decay, half-life and its applications, nuclear decay, mass defect and binding energy, nuclear fission and fusion, fission reactors Optional unit: Light (Newton vs Huygens), electromagnetic waves, photoelectric effect wave particle duality, Michelson -Morley experiment, Special relativity																																			
	Fields: Gravitational fields, gravitational field strength, gravitational potential, orbits Further mechanics: Circular motion, simple harmonic motion, oscillations and pendulums, forced and free vibrations								Thermal Physics: Energy transfer, gas laws, ideal gas equation, kinetic theory of gas molecules, development of theories Optional unit: Discovery of the electron, specific charge on electron, Millikan's experiment, electron microscopes																																			

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