Science curriculum map year 7 (2023 – 2024)

Year		Autumn term		Spring term	Summer term
7	B	**Introductory Unit** • Lab Safety/ hazard symbols • Scientific drawings • Measuring • Using Bunsen burners • Planning experiments • Investigation heating different volumes of water with a Bunsen • graph drawing skills	**Cells to systems** • Using Microscopes • Plant cells • Animal cells • Specialised cells and their functions • **Extended investigation: Specialised cells** • Diffusion • Tissues, organs and organ systems • Bones • Muscles **Multiple choice quiz**	**Reproduction (plants and humans)** • Flower structure • Pollination • Fertilisation in plants • Dispersal mechanisms • **Extended investigation: Seed dispersal** • Sexual reproduction • Reproductive organs (humans) • Fertilisation and pregnancy • Giving birth and after care • Puberty and adolescence **Multiple choice quiz**	**Adaptations and interdependence** • Classification and using keys • Food chains and webs • Predators and prey • Interdependence • Pyramids and bioaccumulation • Habitats and adaptations • **Extended investigation: Habitats** **Multiple choice quiz**
	C		**Particles** • States of matter • Changes of state • Diffusion • **Extended investigation: Diffusion** • Pressure and gases • Density • Dissolving • Separating mixtures (Decanting, Distillation, Chromatography, Filtration) **Multiple choice quiz**	**Types of reactions** • Chemical and physical changes • Thermal decomposition • Precipitation • Combustion • **Extended investigation: Combustion reactions** • Energy changes • Oxidation reactions • Crystallisation **Multiple choice quiz**	**Acids and alkalis** • Safety with acids and alkalis • Making and using indicators • pH • Neutralisation • **Extended investigation: Indicators** • Metals and acids • Carbonates and acids **Multiple choice quiz**
	P		**Forces and Friction** • Naming forces • Balanced and unbalanced forces • Mass and Weight • Measuring speed • Friction • **Extended investigation: Friction** • Streamlining • Freefall and air resistance **Multiple choice quiz**	**Energy** • Energy Stores and transfers • Non – renewable and renewable energy resources • Energy in fuels and food • Freefall (potential and kinetic energy stores) • **Extended investigation: Energy changes in bouncing ball** • Appliances and power • Heat and temperature • Conduction, convection and radiation **Multiple choice quiz**	**Electricity and magnetism** • Magnets and magnetic fields • Circuit symbols • Building circuits • Series and parallel circuits • Measuring potential difference and current • Building and using electromagnets • **Extended investigation: Electromagnets** **Multiple choice quiz**

Science curriculum map year 8 (2023 – 2024)

Year		Autumn term	Spring term	Summer term
8	B	**Body and disease** • Balanced diet • Digestive system • Enzymes • Absorption • Breathing • Respiration • **Extended investigation: Respiration** • Microbes • Disease transmission • Body defences • **Multiple choice quiz**	**Variation and inheritance** • Variation • Continuous variation • Discontinuous variation • Inherited vs environmental variation • **Extended investigation: Variation** • DNA, Chromosomes and genes • Inherited diseases • Selective breeding • Natural selection • Extinction • Conservation • **Multiple choice quiz**	**Plants and photosynthesis** • Plant structure and systems • Photosynthesis • Chloroplasts • Nutrients for plants • Structure of a leaf • **Extended investigation: Starch storage in leaves** • History of photosynthesis • Farming • **Multiple choice quiz**
	C	**Atoms, elements and periodic table** • Elements • Atoms • Compounds • Chemical formulae • Periodic table • Metals and non-metals • Conservation of mass • **Extended investigation: Conservation of mass** • Balancing equations • **Multiple choice quiz**	**Materials** • Metals and acids • Metals and water • Metal and oxygen • Displacement reactions • **Extended investigation: Displacement reactions** • Metal extraction • Ceramics • Polymers • Composites • **Multiple choice quiz**	**Environmental Chemistry** • Structure of the earth • Sedimentary rocks • Igneous rocks • **Extended investigation: Crystal sizes of Igneous rocks** • Metamorphic rocks • Rock cycle • Earth's atmosphere • Carbon cycle • Global warming • Earth's resources • **Multiple choice quiz**
	P	**Waves (light and sound)** • Waves • Reflection • **Extended investigation: Reflection** • Refraction • The eye • Rainbows • Sound waves • The ear • Uses of waves • **Multiple choice quiz**	**Space** • Solar system • Phases of the moon • Seasons • Planetary characteristics • Theories of the solar system • **Extended investigation: solar system** • Beyond the solar system • Telescopes • Satellite orbits • Space travel • **Multiple choice quiz**	**Pressure and Moments** • Pressure • Pressure in gases • Rockets • Pressure in liquids • Hydraulics • Levers • **Extended investigation: Levers** • Moments • **Multiple choice quiz**

Science curriculum map year 9 (2023 – 2024)

Year		Autumn term	Spring term	Summer term
9	B	**B1 Cell Biology** • Types of Cell • Primitive Cells • Specialised Cells • Cell Differentiation • Microscopy • **Required Practical - Microscopes** • Culturing Microorganisms • **Multiple choice Quiz** • **Required Practical - Microbiology (separate Biology only)**	**B1 Cell Biology** • Mitosis and the Cell Cycle • Stem Cells • Diffusion • Specialised Exchange Surfaces • Osmosis • **Required Practical - Osmosis** • Active Transport • **End-of-Topic Test**	**Healthy living topic** • Healthy diet • Effect of eating disorders on health • Specialised diets • Smoking • Alcohol • **Multiple choice quiz** • Sunbathing and impact of using sunbeds • STIs • Drugs legal and illegal **Ecology skills** • Methods of sampling **Biology skills** • Researching • Presenting information • Communicating about science • Working in a team
	C	**C1 Atomic Structure and the Periodic Table** • Atoms & Formulae • Changing ideas about atoms • Sub-atomic particles • Electronic structure • Developing the Periodic Table • Comparing metals and non-metals • **Multiple choice quiz** • Exploring Group 1 • Exploring Group 7 • Transition metals (Chem only) • Metals and non-metal compounds • **End of topic test**	**C2 Bonding & Structure** • States of Matter • Ionic Bonding • Covalent Bonding **Multiple choice quiz** • Metallic Bonding • Carbon Allotropes • Nanoparticles **Chemistry practical skills work** • Types of chemical reaction • Collecting and testing gases • Identifying metal Ions • Distillation	**C2 Bonding & Structure** • revision • **End of topic test** **C9 Chemistry of the atmosphere** • Proportion of gases in the atmosphere • The Earth's early atmosphere • Evolution of the atmosphere • Human activities which contribute greenhouse gases • Global climate changes • The carbon footprint and its reduction • Atmospheric pollutants and their sources **C9 End of topic test**

	P	**Physics skills** • Graphing skills • Practical skills • Types of data • Speed extended investigation **P2 Electricity** • Static electricity • Electric fields • Current, charge, potential difference and resistance • Series and parallel circuits • **Multiple choice quiz** • Required practical: Combinations of resistors in series and parallel.	**P2 Electricity continued** • Ohmic and non ohmic conductors • Required practical: Investigating the I-V Characteristics of circuit elements. • Required practical: Investigating the resistance in a length of wire. • Control circuits – LDRs and Thermistors • **Mid topic written test** • Electricity in the home • The national grid • Transmitting electricity	**P2 Electricity continued** • Electrical power • Transformers • Electricity calculations • **End of topic test** **P8 Space** • The solar system • Lifecycle of stars • Orbits and satellites • Redshift **Multiple choice quiz** • Planetarium • Rockets

Science curriculum map year 10 (2023 – 2024)

Year		Autumn term	Spring term		Summer term		
10	B	**B2 Organisation** • Digestive system • Heart, blood & circulatory system • Heart disease & treatments **B2 Multiple choice quiz** • Health issues & risk factors • Cancer • Plant transport systems • Transpiration & translocation **B1 End of topic test** **Required Practical – Food tests** **Required Practical – Enzyme activity and pH**	**B3 Infection & Response** • Pathogens • Diseases • Malaria • Body defences • Vaccination **B3 Multiple choice Quiz (triple only)** • Drug development • Monoclonal antibodies (triple only) • Plant diseases & defences (triple only) **B2 End of topic test**	**Spring Mocks**	**B4 Bioenergetics** • Photosynthesis • Limiting factors • Respiration • Response to exercise • Fermentation **B3 End of topic test** **Required Practical – Rate of photosynthesis** **Required Practical – Osmosis**	**Summer mocks Unit 1 papers**	**B7 – Ecology** • Biodiversity • Maintaining biodiversity **Required Practical – Measure the population size of a common species**
	C	**C4 Chemical Changes** • Metal oxides • Reactivity series • Extraction of metals • Oxidation and reduction in terms of electrons (H) • Reaction of metals with acids • Neutralisation of acids and salt production **C4 Multiple choice quiz** • pH and neutralisation • Strong and weak acids (H) • Electrolysis of molten ionic compounds • Electrolysis of aqueous solutions (H) **C4 End of topic test**	**C3 Quantitative Chemistry** • Conservation of Mass • Relative Formula Mass • Mass Change in Gas Reactions • Uncertainty • Moles (H) • Using moles in equations (H) • Concentration of solutions • Percentage Yield (Chem only) • Atom Economy (Chem only) • Using Concentrations of solution (Chem only) • Amounts of substance as gas volumes (Chem only) **C3 End of topic test**		**C5 Energy Changes** • Exo and Endothermic reactions • Reaction Profiles • Energy changes in reactions (H) • Cells & Batteries (Chem only) • Fuel Cells (Chem only) **C5 End of topic test** **Required Practical: Investigate the variables that affect temperature changes in reacting solutions with metals and metal compounds**		**C6 Rate and Extent of Chemical Change** • Factors that affect rates of reaction • Collision theory

		Required practical: Preparing a pure, dry sample of a soluble salt from an insoluble oxide or carbonate **Required practical: Electrolysis of aqueous solutions**	**Required practical: Finding the reacting volumes of solutions of acid and alkali by titration (Chem only)**				
	P	**P1 Energy** • Energy stores and transfers • Kinetic energy • Gravitational and potential energy • Work done and Power **P1 Mid topic assessment** • Energy dissipation and efficiency • **Required practical Materials as thermal insulators (triple only)** • Energy resources and global energy supplies **P1 End of topic test** **P3 Particle model of matter** • Density • **Required practical: Density of solid and liquids**	**P3 Particle model of matter continued** • Changes of state • Internal energy • Specific heat Capacity • **Required practical: Specific heat capacity of aluminium** • Specific latent heat • Particle motion • Pressure of a gas (Triple only) **P3 End of topic test** **P4 Atomic structure** • Structure and components of an atom • Radioactive decay • Background radiation **P4 Multiple choice quiz**		**P4 Atomic structure continued** • Nuclear equations • Half-life • Contamination, irradiation and tracers • History of the atom • Uses of radioactivity (Triple only) • Nuclear fission (Triple only) • Nuclear Fusion (Triple only) **P4 End of topic test** **Mock preparation:** • P2 Electricity recap from Y9 **(including required practicals)** • and revision of P1, P3 and P4		**P7 Electromagnetism** • Magnets and magnetic fields • Magnetic field of a wire • Electromagnets • The motor effect (Higher) • Force on a wire (Higher) **P7 test completed on return in September after revision/ retrieval activates carried out.**

Science curriculum map year 11 (2023 – 2024)

Year		Autumn term			Spring term		Summer term	
11	B	**B8 Ecology** - Communities - **Required Practical - Measuring Populations** - Abiotic and Biotic Factors - Adaptations - Levels of organisation - Cycling Materials **Combined Science Only** - Human impact on ecosystems **B8 End of Topic Assessment**	November Mocks	**Separate Biology Only** **Multiple Choice Quiz** - Decay - Impact of environmental change - Human impact on ecosystems - Trophic Levels in ecosystems - Food production - **Required Practical – Decay** **B8 End of Topic Assessment** **B5 Coordination and Control** - Homeostasis - Structure and Function of the nervous system - **Required Practical - Reaction time** - The brain and the eye (separate Biology only) - Control of body temperature (separate Biology only) **Multiple Choice Quiz**	January Mocks	**B5 Coordination and Control (cont)** - Human endocrine system - Control of blood glucose - Maintain water balance (separate Biology only) - Hormones in human reproduction - Contraception and infertility - Negative feedback - Plant hormones (separate Biology only) - **Required Practical - Seed growth (separate Biology only)** **B5 End of Topic Assessment** **B6 Genetics** - Sexual and Asexual reproduction - Meiosis - DNA and the genome - Genetic inheritance - Inherited disorders - Sex determination **Multiple Choice Quiz**	**B7 Variation and Evolution** - Variation - Evolution - Selective Breeding - Genetic Engineering - Cloning (separate Biology only) - Theory of evolution, speciation and the understanding of genetics (separate Biology only) - Evidence for evolution - Fossils - Extinction - Resistant bacteria - Classification **B6&7 End of Topic Assessment** **Revision for external exams**	Summer Exams
	C	**C6 Rate and Extent of Chemical Changes** • Measuring and calculating rates • Factors increasing rates • Collision Theory • Catalysts • Equilibrium • Le Chatelier's Principle **C6 End of topic test** Required practical: Investigate how concentration affect rates		**C7 Organic Chemistry** • Crude oil • Combustion and hydrocarbons • Alkenes and cracking • Alcohols (Chem only) • Carboxylic Acids (Chem only) • Addition polymerisation (Chem only) • Condensation Polymerisation • Amino Acids (H) • DNA **C7 End of topic test**		**C8 Chemical Analysis** • Formulations • Chromatography • Tests for gases • Flame tests (Chem only) • Tests for ions (Chem only) **C8 End of topic test** Required practical: Paper chromatography Required practical: Using test to identify dissolved ions (Chem only) **C9 Chemistry of the atmosphere** • Evolution of the atmosphere • Climate changes • Atmospheric pollutants **C9 End of topic test**	**C10 Using Resources** • Water resources and treatment • Alternative methods of metal extration (H) • LCA and recxycling • Corrosion (Chem only) • Alloys (Chem only) • Ceramics, polymers and composites (Chem only) • Haber process (Chem only) • NPK fertilisers **C10 End of topic test** Required practical: Purification and analysis of water samples	

	P	**P7 Electromagnetism** • Induced potential (Triple) • Loudspeakers and microphones (Triple) • Transformers (Triple) **P7 End of topic test** **P5 Forces** • Forces • Speed and acceleration • Distance-time and velocity-time graphs		• Newton's laws • Required practical Acceleration • Momentum (Higher) and change in momentum (Triple) • Stopping distances • Moments, gears and leavers (Triple) • Fluid pressure (Triple) • Springs RP Relationship between force and extension **P5 End of topic test**		**P6 Waves** • Wave properties and wave speed • Required practical measuring wave speed • Refraction of light Required practical refraction (Higher) • Refraction and reflection of light Required practical refraction and reflection (Triple) • Lenses and visible light and colour (Triple) • Sound and ultrasound (Triple) • Seismic waves (Triple) • Electromagnetic waves • Infrared radiation • Required practical infrared radiation • Blackbody radiation (Triple) • **P6 test.**	**P8 Space (Triple)** • Our Solar system • Lifecycle of a star • Orbital motion • Redshift **Revision of all topics and required practicals and exam preparation ready for GCSEs**	

Science curriculum map years 7 to 13 (2023 – 2024)

Year		Autumn term		Spring term	Summer term	
7	B	Intro-ductory Unit	Cells to systems	Reproduction (plants and humans)	Adaptations and interdependence	Dendrite car project
	C		Particles	Types of reactions	Acids and alkalis	
	P		Forces and Friction	Energy	Electricity and magnetism	
8	B	Body and disease		Variation and inheritance	Plants and photosynthesis	
	C	Atoms, elements and periodic table		Materials	Environmental Chemistry	
	P	Waves (light and sound)		Space	Pressure and Moments	
9	B	B1 Cell Biology		B1 Cell Biology continued	Healthy living and Ecology skills Biology skills work	
	C	C1 Atomic Structure and the Periodic Table		C1 continued C2 Bonding and Structure Chemistry skills work	C9 Chemistry of the Atmosphere	
	P	P2 Electricity Physics skills work		P2 Electricity continued	P2 revision & test P8 Space	
10	B	B2 Organisation, B3 Infection and response		B3 Infection and response, B4 Bioenergetics	B4 Bioenergetics	B7 Ecology
	C	C4 Chemical Changes		C4 continued C3 Quantitative Chemistry	C5 Energy Changes	C6 The rate & extent of chemical change
	P	P1 Energy P3 Particle model of matter		P3 continued P4 Atomic structure	P2 Electricity recap from Y9 and revision of P1, P3 and P4	P7 Electromagnetism
11	B	B8 Ecology B5 Coordination and control		B6 Genetics B7 Variation & evolution	Revision of GCSE	

	C	C6 continued C7 Organic Chemistry C8 Chemical Analysis	C9 Chemistry of the Atmosphere recap C10 Using Resources	units and all required practicals	GCSE EXAMS
	P	P7 continued P5 Forces	P6 Waves P8 Space (Triple)		
12	B	3.1 Biological molecules and their properties,3x tests 3.2 immunity, test 3.4 protein synthesis, test	3.3 Microscopy and cells, membrane transport, test 3.4, gas exchange, test digestion, test, cell cycle and cell division, test mass transport(mammals), test	3.4 mass transport (plants), test biodiversity, genetic diversity,test, taxonomy, test 3.7 Field trip, conservation,	
	C	3.1.1 Atomic Structure, test 3.1.2 Amount of Substance, test 3.1.3 Bonding, test	3.1.4 Energetics, test 3.1.5 Kinetics 3.1.6 Chemical Equilibria, test 3.3.1 Intro to Organic Chemistry, test 3.3.2 Alkanes, test 3.3.3 Haloalkanes, test 3.3.4 Alkenes, test	3.1.7 REDOX, test 3.2.1 Periodicity 3.2.2 Group 2 3.2.3 Group 7, test 3.3.6 Organic Analysis, test	
	P	P2 Mechanics and P3 Electricity Combined half topic test in October P2 Mechanics test December P3 Electricity test December	P4 Materials and P5 Wave/Particle nature of light P5 half topic test on Waves February P4 Materials test March P5 Waves/particle test March	Revision for Year 12 exams, Particle Physics research project and presentations on chosen topics	
	Ap Sci	Unit 2: Cooling Curves, Chromatography, Titrations, Colorimetry.	Unit 1: Cells, Tissues, Atomic Structure, Bonding, Periodic Table, Waves for Communication	Unit 1: Exam preparation Unit 3: Diffusion Unit 8: Start Musculoskeletal System	
13	B	3.5 Photosynthesis, test respiration, test energy & ecosystems, test 3.7 Conservation continued, test Inheritance and populations, test x2	3.5 Nutrient cycles, test 3.6 Homeostasis, test survival and response, test 3.8 Control of gene expression, test 3.8 genome projects and gene technologies, test	3.6 muscles, essays, Exam prep	EXTERNAL EXAMS
	C	3.1.8 Thermodynamics, test 3.1.9 Rate Equations 3.1.10 Equilibrium constant Kp 3.3.7 Optical Isomerism 3.3.8 Aldehydes and Ketones, test 3.3.9 Carboxylic Acids, test 3.3.10 Aromatic Chemistry	3.1.11 Electrode Potentials, test 3.1.12 Acids & Bases, test 3.2.4 Period 3 elements 3.2.5 Transition Metals 3.2.6 Reactions in aqueous solution 3.3.11 Amines 3.3.12 Polymers 3.3.13 Amino Acids 3.3.14 Organic Synthesis, test 3.3.15 NMR spectroscopy, test 3.3.16 Chromatography	Revision	
	P	P6 Further mechanics, test October P7 Electric and magnetic Fields, test December P8 Nuclear and particle physics, test December	P13 Oscillations, P11 Nuclear radiation, P11 test February P9 Thermodynamics, P10 Space. P12 Gravitational fields, P9, P10 and P12 test March	Revision	

	Ap Sci	**Unit 8: Complete Musculoskeletal System (coursework)** **Unit 3: Diffusion, Enzymes, Plants in their Environment, Energy content of Fuels, Circuits.** **mock exams for unit 3**	**Unit 3: Investigative skills (exam)** **Unit 8: Digestive System (coursework)** **Unit 8: Lymphatic System (coursework)**	**Unit 3 Retake if applicable** **Unit 8 Completing Assignments**	