Curriculum Rationale:

The Science curriculum is designed to develop scientifically literate, curious, and confident learners who can explain, question, and apply scientific ideas to the world around them. Across Key Stages 3 and 4, the curriculum is carefully sequenced to build secure foundational knowledge before developing the analytical, mathematical, practical, and evaluative skills required for success in AQA GCSE Science and beyond. The curriculum emphasises clear conceptual understanding, disciplinary knowledge, scientific vocabulary, practical enquiry, and the ability to communicate scientific ideas accurately.

In Years 7 and 8, the curriculum focuses on building foundational scientific knowledge and curiosity through broad exposure to Biology, Chemistry, and Physics. Students are introduced to core scientific concepts such as cells, particles, forces, energy, electricity, reproduction, chemical reactions, and ecosystems through highly structured and accessible learning experiences. Practical work, scientific discussion, modelling, and explicit vocabulary instruction support students in developing confidence and fluency with scientific thinking. The curriculum revisits key ideas across topics to strengthen long-term retention and prepare students for more abstract scientific concepts later in the curriculum.

Year 7 prioritises scientific induction, foundational knowledge, and engagement with science through concrete and observable phenomena. Students develop early understanding of scientific models, laboratory routines, and Working Scientifically skills. Year 8 deepens this understanding by extending disciplinary knowledge and introducing more abstract concepts such as wave behaviour, atomic structure, respiration, photosynthesis, electromagnetism, and chemical reactions. Students begin to make links between ideas across Biology, Chemistry, and Physics while developing greater independence in practical and written scientific work.

Year 9 acts as a transition between KS3 and GCSE Science. The curriculum prioritises securing foundational KS3 scientific knowledge while gradually introducing GCSE content, vocabulary, routines, mathematical skills, and assessment styles. Learning is deliberately slowed down and highly scaffolded to support confidence, literacy, and conceptual understanding. Students study introductory topics including Cell Study, Body systems, Energy, Electricity, Exploring the Atoms and The Periodic table, at a pace that allows misconceptions to be addressed and foundational understanding to become secure before full GCSE demand is introduced. Assessments are adapted to include greater structure, shorter-response questions, retrieval practice, guided explanations, scaffolded calculations, and reduced cognitive load. This ensures students develop confidence and fluency before encountering the greater complexity and independence required in Years 10 and 11.

The GCSE curriculum in Years 10 and 11 is sequenced to progressively develop deeper scientific understanding, application, and exam readiness. Year 10 consolidates and extends the GCSE foundations introduced in Year 9 before completing the majority of Paper 1 content across Biology, Chemistry, and Physics. Students develop greater fluency in applying scientific knowledge, analysing data, interpreting practical work, constructing extended written explanations, and using mathematical skills within scientific contexts.

Required practicals are explicitly taught and revisited throughout the curriculum to strengthen procedural understanding and disciplinary thinking.

During the latter stages of Year 10, students begin a carefully scaffolded transition into foundational Paper 2 concepts, including the nervous system, rates of reaction theory, and fundamental ideas in forces. This bridge supports continuity between academic years and reduces cognitive overload at the start of Year 11.

Year 11 focuses on the completion of Paper 2 content, the development of synoptic understanding across topics, and preparation for external examinations. Retrieval practice, targeted intervention, exam technique, practical application, and extended-response writing are embedded throughout teaching. Students are supported to develop independence, resilience, and confidence in applying scientific knowledge to unfamiliar contexts and real-world problems.

The curriculum is underpinned by the principles of sequencing, retrieval, scaffolding, and disciplinary literacy. Knowledge is deliberately revisited and connected over time so that students can move from foundational understanding towards greater abstraction, application, and scientific reasoning. The curriculum is designed to ensure that all students, regardless of starting point, are supported to succeed in science and develop the knowledge and skills needed for further study and informed participation in the modern world.

Curriculum Journey

- **Year 7** → foundational scientific ideas, scientific routines, and curiosity-building
- **Year 8** → deeper disciplinary understanding and preparation for abstraction
- **Year 9** → scaffolded GCSE transition year focused on securing KS3 foundations
- **Year 10** → GCSE Paper 1 completion and transition into foundational Paper 2 concepts
- **Year 11** → GCSE Paper 2 completion, synoptic understanding, revision, and examination preparation

Year 7			
Term	**Unit Title**	**Unit Purpose**	**Knowledge and Skills**
Autumn 1	7.0 Science Induction	Introduce students to laboratory routines, scientific thinking, and foundational Working Scientifically skills needed for KS3 Science.	Lab safety, equipment use, variables, observations, measurements, graph skills, scientific vocabulary, teamwork, introduction to practical work and scientific enquiry.
Autumn 2	7.1 Cells & 7.2 Reproduction	Develop understanding of living organisms and life processes through foundational biological concepts.	Animal and plant cells, specialised cells, microscopes, organisation of living things, puberty, reproduction, fertilisation, development, variation, scientific diagrams and labelled explanations.
Spring 1	7.3 Interdependence & 7.4 Particles	Introduce ecosystems and the particle model as core scientific ideas underpinning later Biology and Chemistry learning.	Food chains, ecosystems, adaptations, environmental interactions, states of matter, particle model, changes of state, diffusion, heating and cooling processes.
Spring 2	7.5 Pure and Impure & 7.6 Acids and Alkalis	Build foundational Chemistry knowledge through separation methods and simple chemical reactions.	Mixtures, filtration, evaporation, distillation, chromatography, acids, alkalis, indicators, neutralisation, hazard awareness, simple word equations.
Summer 1	7.7 Energy, 7.8 Circuits (Foundational) & End of Year Examination	Consolidate key Physics concepts and prepare students for end-of-year assessment through retrieval and application of Year 7 knowledge.	Energy stores and transfers, renewable/non-renewable energy, circuit symbols, current flow, simple circuits, contact and non-contact forces, gravity, friction, balanced/unbalanced forces, retrieval practice and exam preparation.
Summer 2	7.9 Space	Develop curiosity and scientific understanding through the study of	Solar system, planets, day and night, seasons, Moon phases, gravity in space, scale of the universe, scientific models and observation.

		Earth and space systems after end-of-year assessments.	
Literacy Focus: One sentence - teaching of sci vocab every lesson; scheduled librara lesson term 1 & 2			
Numeracy Focus			

Year 8			
Term	**Unit Title**	**Unit Purpose**	**Knowledge and Skills**
Autumn 1	8.0 Induction & 8.1 Forces	Re-establish scientific routines while extending understanding of forces and motion from Year 7 foundations.	Speed, motion, resultant forces, pressure, moments, gravity, friction, force diagrams, practical investigation, data analysis and scientific explanation.
Autumn 2	8.2 Waves (Light & Sound)	Introduce wave behaviour and energy transfer through light and sound phenomena.	Sound waves, pitch and volume, light reflection, refraction, colour, wave properties, communication systems, practical investigations.
Spring 1	8.3 Electricity and Magnetism	Deepen understanding of electrical systems and magnetism through practical and conceptual learning.	Current, voltage, resistance, series and parallel circuits, electromagnets, magnetic fields, uses of electromagnetism, circuit calculations (introductory)
Spring 2	8.4 Tissues and Organs & 8.5 Respiration and Photosynthesis	Build understanding of biological systems and energy transfer in living organisms.	Cells to organ systems, digestion, breathing, aerobic respiration, photosynthesis, gas exchange, adaptations, role of plants in ecosystems.

Summer 1	8.6 Diversity, 8.7 Atoms and Periodic Table, 8.8 Chemical Reactions & End of Year Examination	Consolidate core Biology and Chemistry concepts while preparing students for end-of-year assessment.	Classification, variation, adaptation, atomic structure, elements and compounds, periodic table organisation, chemical reactions, conservation of mass, combustion, displacement reactions, retrieval practice and exam preparation.
Summer 2	8.9 Earth Science	Explore Earth systems and environmental science through real-world applications after examinations.	Rock cycle, Earth structure, climate, atmosphere, weathering, carbon cycle, human impact on Earth systems, sustainability and environmental awareness.
Literacy Focus: One sentence - teaching of sci vocab every lesson; scheduled librara lesson term 3 to 6			
Numeracy Focus: Once sentence - calculations in bio chema nd [physics			
Oracy Focus: One sentence – turn and talk			

Year 9			
Term	**Unit Title**	**Unit Purpose**	**Knowledge and Skills**
Autumn 1	B1 Cell Biology (Transition to GCSE) • Cell structure and microscopes • Cell division • Transport in cells	Develop secure understanding of fundamental biological concepts from KS3 that underpin GCSE Biology. Introduce GCSE scientific language and routines through highly scaffolded learning.	Animal and plant cells, specialised cells, microscopy, diffusion, organisation of living organisms, basic practical skills, graph interpretation, scientific vocabulary. Focus on securing KS3 understanding before GCSE application.
Autumn 2	C1 Atomic Structure & Periodic Table (Transition to GCSE) • Introduction to chemistry • Atoms, elements and compounds • Separation techniques • The Periodic table	Build secure foundations in particle theory and atomic structure to prepare students for GCSE Chemistry.	Particle model, elements, compounds, mixtures, atoms, simple atomic structure, periodic table organisation, metals and non-metals, symbols and formulae. Scaffolded mathematical and literacy support throughout.
Spring 1	P1 Energy (Transition to GCSE) • Understanding energy concepts • Force & extension • Mechanical energy calculations • Work and power • Conservation of energy and efficiency	Strengthen understanding of energy concepts from KS3 while introducing GCSE-style calculations and models.	Energy stores, transfers, efficiency, renewable and non-renewable energy resources, energy conservation, simple calculations, interpreting diagrams and data. Emphasis on scientific explanation and literacy.

Spring 2	B2 Organisation (Transition to GCSE)	Develop understanding of organisation in living systems and prepare students for GCSE Biology content.	Organisation of cells, tissues, organs and organ systems, digestive system, enzymes, respiration, healthy lifestyle factors. Scaffolded extended writing and retrieval practice.
Summer 1	P2 Electricity (Transition to GCSE)	Secure KS3 understanding of electricity before introducing GCSE circuit concepts and calculations.	Circuit symbols, current, voltage, resistance, series and parallel circuits, electrical safety, simple equations, practical circuit construction, interpretation of circuit diagrams.
Summer 2	C2 Bonding, Structure & Properties (Transition to GCSE)	Introduce bonding models and structure-property relationships through simplified and scaffolded GCSE preparation.	Ionic, covalent and metallic bonding (introductory level), states of matter, structure and properties, simple particle diagrams, explanation of properties using models, scientific communication.

Year 10			
Term	**Unit Title**	**Unit Purpose**	**Knowledge and Skills (substantive and displianry)**
Autumn 1	Paper 1 Consolidation & GCSE Foundations	Consolidate and strengthen the transition content introduced in Year 9 before progressing into full GCSE Paper 1 demand. Develop confidence with GCSE vocabulary, equations, practical skills, and exam-style responses.	Retrieval and consolidation of B1 Cell Biology, B2 Organisation, P1 Energy, P2 Electricity, C1 Atomic Structure, and C2 Bonding. Increased focus on application, required practicals, extended explanations, calculations, and scientific literacy.
Autumn 2	Biology Paper 1 Applications	Develop deeper understanding of biological systems and processes required for GCSE success.	Infection and response, communicable diseases, human defence systems, vaccination, antibiotics, bioenergetics, photosynthesis, respiration, required practicals, interpretation of data and graphs.
Spring 1	Chemistry Paper 1 Applications	Extend understanding of chemical reactions, quantitative chemistry, and analysis.	Quantitative chemistry, chemical changes, electrolysis, energy changes, extraction of metals, reactivity series, acids and alkalis, required practicals, calculations and analysis.
Spring 2	Physics Paper 1 Applications	Apply energy and particle concepts to more complex GCSE Physics contexts.	Particle model, density, changes of state, internal energy, atomic structure, radiation, nuclear models, required practicals, mathematical application and graphical analysis.
Summer 1	End of Year Examination Preparation & Introduction to Paper 2	Consolidate Paper 1 knowledge through structured revision and assessment preparation while introducing foundational Paper 2 concepts at a scaffolded level.	Retrieval practice, exam technique, command words, extended responses, practical recall, targeted intervention. Introduction to: B5 Homeostasis (nervous system only), C6 Rates of

			Reaction (collision theory and factors affecting rate), P5 Forces (fundamental force concepts, resultant forces, contact/non-contact forces).
Summer 2	Early Paper 2 Foundations	Build confidence with introductory Paper 2 concepts before full delivery in Year 11.	Nervous system pathways, reflexes, reaction time, rates of reaction theory, particle collisions, balanced/unbalanced forces, motion basics, forces as interactions, data interpretation, scaffolded practical application.

Year 11			
Term	**Unit Title**	**Unit Purpose**	**Knowledge and Skills**
Autumn 1	Biology Paper 2	Develop understanding of biological systems, control, and ecology.	Homeostasis, nervous system, hormones, inheritance, variation, evolution, ecology, required practicals.
Autumn 2	Chemistry Paper 2	Develop understanding of chemical analysis, atmosphere, and resources.	Rates and equilibrium, organic chemistry, chemical analysis, atmosphere, Earth's resources.
Spring 1	Physics Paper 2	Develop understanding of forces, waves, and magnetism.	Forces, motion, waves, electromagnetism, space physics (Triple), required practicals.
Spring 2	GCSE Revision & Intervention	Consolidate Paper 1 and Paper 2 knowledge before examinations.	Retrieval practice, exam technique, required practicals, targeted intervention, extended responses, exam skills.
Summer 1	Examination Preparation	Prepare students for external examinations through structured revision.	Past papers, misconceptions, command words, scientific explanations, application of knowledge.
Summer 2	Transition & Scientific Literacy	Support post-16 transition and scientific thinking.	GCSE review, scientific communication, bridging tasks, enrichment activities.