



Long Term Plan Science

KS4 (Year 10 and 11)

Triple and Combined

M Aziz
September 2026

Vision and Intent

Rokeby's Science Curriculum strives for exceptional student progress, fostering critical thinking, problem-solving, innovation, and teamwork for success beyond the classroom.

To enable all students to achieve, our subject curriculum is underpinned by the following principles:



Ambitious -The Rokeby KS4 Science Curriculum is ambitiously designed to integrate scientific inquiry, cross-curricular skills, and diverse explorations, fostering students' curiosity and passion for understanding the natural world.



Sequenced / Spiral - Our science curriculum employs a sequenced/spiral approach, systematically reinforcing fundamental concepts throughout the Key Stages, thereby laying a robust foundation in science, where students delve deeper into advanced topics, ensuring a deep and interconnected understanding of scientific principles.



Literacy - Literacy forms the cornerstone of our scientific education, empowering students to confidently articulate precise scientific concepts verbally and in writing, fostering fluency in scientific vocabulary and enriching communication across all aspects of our curriculum.



Cultural Capital - The science curriculum empowers students with vital knowledge and skills for their future endeavours, offering immersive experiences like field trips to museums and research institutions, fostering a deeper appreciation for the relevance of science in our modern world.

Year 10

Term	Half Term	Topic	What Students Learn
Autumn Term	Autumn 1	CP1 Motion (Physics)	Students learn how objects move, how to interpret distance–time and velocity–time graphs, and how to calculate speed, acceleration and resultant motion. They apply equations to real situations and develop graph-reading and problem-solving skills. <i>(“Vectors and scalars... Distance/time graph... Acceleration... Velocity/time graph”)</i>
		CP2 Forces & Motion (Physics)	Students study Newton’s laws, momentum, stopping distance and crash hazards. They learn how forces interact, how motion changes, and how to apply equations to real-life contexts such as road safety. <i>(“Newton’s First, Second and Third law... Momentum... Stopping distance”)</i>
	Autumn 2	CB3 Genetics (Biology)	Students learn how DNA, genes and chromosomes control inheritance. They study meiosis, variation, mutations, alleles, and how Punnett squares predict genetic outcomes. <i>(“Structure and function of chromosomes, genes and DNA... Meiosis... Inheritance patterns”)</i>
		CC5–6 Ionic & Covalent Bonding (Chemistry)	Students learn how atoms form ions and covalent bonds, how electron transfer and sharing work, and how bonding affects properties. They compare ionic lattices, simple molecules and giant structures. <i>(“Formation of ions... Covalent bonds... Properties of ionic and covalent substances”)</i>
		CC7 Types of Substances (Chemistry)	Students classify substances as ionic, molecular, metallic or giant covalent. They explore allotropes of carbon, conductivity, melting points and real-world material uses. <i>(“Classification of substances... Relationship between structure, bonding and properties”)</i>

Term	Half Term	Topic	What Students Learn
Spring Term	Spring 1	CB4 Natural Selection & Genetic Modification (Biology)	Students learn how evolution occurs, how natural selection works, and how selective breeding and genetic modification are used in agriculture and medicine. They evaluate ethical issues and analyse evidence for evolution. (<i>"Variation... Natural selection... Genetic modification"</i>)
		CP3 Conservation of Energy (Physics)	Students learn how energy is stored, transferred and conserved. They calculate efficiency, power and energy changes, and compare renewable and non-renewable resources. (<i>"Energy stores... Efficiency... Renewable resources"</i>)
		CC8 Acids & Alkalis (Chemistry)	Students learn about acids, alkalis, indicators, neutralisation, reactions with metals and carbonates, and solubility. They use the pH scale and write word equations. (<i>"Properties of acids and alkalis... Neutralisation reactions... pH scale"</i>)
	Spring 2	CP4 Waves (Physics)	Students learn how waves transfer energy, how to measure wavelength and frequency, how to calculate wave speed, and how refraction works. They compare transverse and longitudinal waves. (<i>"Wave speed... Refraction... Transverse vs longitudinal waves"</i>)
		CP5 Light & Electromagnetic Spectrum (Physics)	Students study reflection, refraction, and the electromagnetic spectrum. They compare wavelengths, frequencies and uses of EM waves, and evaluate risks such as UV exposure. (<i>"Electromagnetic waves... Uses of EM radiation... EM radiation dangers"</i>)
		CC9 Calculations Involving Masses (Chemistry)	Students learn about moles, relative formula mass, conservation of mass, and reacting masses. They perform quantitative chemistry calculations using balanced equations. (<i>"Relative atomic mass... Moles... Conservation of mass"</i>)

Term	Half Term	Topic	What Students Learn
Summer Term	Summer 1	CC10 Electrolytic Processes (Chemistry)	Students learn how electrolysis works, how ions move, and how products form at electrodes. They study oxidation/reduction and industrial uses such as metal extraction. (<i>"Electrolysis... Cations and anions... Products from electrolysis"</i>)
	Summer 2	Revision & Exam Preparation	Students consolidate key GCSE concepts from Biology, Chemistry and Physics. They practise exam-style questions, develop scientific vocabulary, and strengthen investigative skills. (<i>"Key concepts... Application of scientific knowledge... Investigative skills"</i>)
		GCSE Skills & HSW (How Science Works)	Students learn how to plan investigations, analyse data, evaluate methods and apply scientific reasoning — essential skills for GCSE success.
		End-of-Year Projects	Students complete extended science projects applying KS4 knowledge to real-world contexts. They practise research, modelling, data handling and scientific communication.

Year 11

Term	Half Term	Topic	What Students Learn
Autumn Term	Autumn 1	CB7 Animal Coordination, Control & Homeostasis (Biology)	Students learn how hormones regulate processes such as metabolism, blood glucose, the menstrual cycle and stress responses. They study negative feedback, diabetes, and how hormonal systems maintain internal balance. (<i>"Hormones... Menstrual cycle... Blood glucose regulation... Negative feedback"</i>)
	Autumn 1	CB8 Exchange & Transport in Animals (Biology)	Students learn how the circulatory and respiratory systems work together to transport oxygen, nutrients and waste. They study the heart, blood vessels, gas exchange and respiration. (<i>"Circulatory system... Gas exchange... Respiration rates"</i>)
	Autumn 1	CB9 Ecosystems & Material Cycles (Biology)	Students explore food webs, energy transfer, biodiversity, sampling techniques, decomposition, and the carbon and water cycles. They evaluate human impacts on ecosystems and sustainability. (<i>"Ecosystems... Carbon cycle... Biodiversity... Food security"</i>)
	Autumn 2	CP9 Electricity & Circuits (Physics)	Students learn how current, voltage and resistance work in series and parallel circuits. They interpret circuit diagrams, use ammeters/voltmeters, and investigate resistance. (<i>"Current... Potential difference... Resistance... Power"</i>)
	Autumn 2	CC13–15 Groups in the Periodic Table (Chemistry)	Students study Group 1, Group 7 and Group 0 elements, learning how electron structure affects reactivity and trends. They predict reactions and displacement outcomes. (<i>"Group 1... Group 7... Halogen reactivity... Group 0"</i>)
	Autumn 2	CC14 Rates of Reaction (Chemistry)	Students learn how temperature, concentration, surface area and catalysts affect reaction rates. They use collision theory and analyse rate graphs. (<i>"Rates of reaction... Collision theory... Catalysts"</i>)
	Autumn 2	CC15 Heat Energy Changes (Chemistry) CC16 Fuels (Chemistry) CC17 Earth & Atmospheric Science (Chemistry)	Students study exothermic/endothermic reactions, hydrocarbons, fractional distillation, climate change, and atmospheric science.

Term	Half Term	Topic	What Students Learn
Spring Term	Spring 1	CB7–CB9 Biology Revision & Application	Students consolidate key GCSE biology topics: hormones, homeostasis, circulation, respiration, ecosystems and cycles. They practise data interpretation, extended writing and exam-style questions.
	Spring 1	CP9–CP10 Physics Revision	Students revisit electricity, circuits, energy transfer and waves. They strengthen equation fluency, graph interpretation and practical skills.
	Spring 1	CC13–17 Chemistry Revision	Students revise bonding, periodic trends, reaction rates, energy changes, fuels and atmospheric science. They practise calculations, diagrams and exam-style questions.
	Spring 2	CP4 Waves (Physics)	Students learn how waves transfer energy, how to measure wavelength/frequency, how to calculate wave speed, and how refraction works. They compare transverse and longitudinal waves. (<i>“Wave speed... Refraction... Transverse vs longitudinal waves”</i>)
	Spring 2	CP5 Light & Electromagnetic Spectrum (Physics)	Students study reflection, refraction, EM waves, their uses and dangers. They compare wavelengths, frequencies and energies across the EM spectrum. (<i>“Electromagnetic waves... Uses... EM radiation dangers”</i>)
	Spring 2	CC9 Calculations Involving Masses (Chemistry)	Students learn about moles, relative formula mass, conservation of mass and reacting masses. They perform quantitative chemistry calculations using balanced equations. (<i>“Moles... Relative formula mass... Conservation of mass”</i>)

Term	Half Term	Topic	What Students Learn
Summer Term	Summer 1	CC10 Electrolytic Processes (Chemistry)	Students learn how electrolysis works, how ions move, and how products form at electrodes. They study oxidation/reduction and industrial uses such as metal extraction. (<i>"Electrolysis... Cations and anions... Products from electrolysis"</i>)
	Summer 2	Final GCSE Revision & Exam Preparation	Students consolidate all GCSE Biology, Chemistry and Physics content. They practise exam-style questions, develop scientific vocabulary, and strengthen investigative and analytical skills.
	Summer 2	GCSE Skills & HSW (How Science Works)	Students refine practical skills, data analysis, evaluation of methods, graph interpretation and scientific reasoning — essential for GCSE exams.

Useful revision website

- <https://www.bbc.co.uk/bitesize>
- <https://www.senecalearning.com>
- <https://www.thenational.academy>
- <https://www.physicsandmathstutor.com>
- <https://edu.rsc.org/resources>
- <https://www.cellsalive.com>
- <https://phet.colorado.edu>
- <http://hyperphysics.phy-astr.gsu.edu> ([hyperphysics.phy-astr.gsu.edu in Bing](#))
- <https://www.chemguide.co.uk>
- <https://qualifications.pearson.com> ([qualifications.pearson.com in Bing](#))

Youtube Science channels

<https://www.youtube.com/@fuseschool> ([youtube.com in Bing](#))
<https://www.youtube.com/@cognitoedu> ([youtube.com in Bing](#))
<https://www.youtube.com/@freesciencelessons> ([youtube.com in Bing](#))
<https://www.youtube.com/@crashcourse> ([youtube.com in Bing](#))
<https://www.youtube.com/@SciShow>
<https://www.youtube.com/@kurzgesagt> ([youtube.com in Bing](#))
<https://www.youtube.com/@NatGeoKids> ([youtube.com in Bing](#))