

Curriculum intent statement for Science

We aim to develop all students into scientists who:

- have opportunities to indulge their natural curiosity for science leading to a lifelong passion
- are scientifically confident and skilled learners with potential for embarking upon STEM-based careers
- have a broad and deep knowledge of the sciences through immersion in our engaging spiral curriculum

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 10 Combined Science / Trilogy						
Biology	Organisation B4	Infection and Response B5 , B6	Infection and response B7 Bioenergetics B8	Bioenergetics B8 B9 Homeostasis and Response B10	Ecology B17	
Skills	Making observations Drawing conclusions Dissection skills	Aseptic technique Calculating bacterial populations Evaluating scientific theories Interpretation of data History of drug development	Calculating rate-straight line equations Calculating percentage change Investigate the effect of exercise on heart rate	Investigating limiting factors rate of photosynthesis Testing reflex actions Measuring reaction times Investigating newly germinated shoots Interpretation of graphical data Investigation- Field work	Interpretation of graphical data Investigation- Field work	
Links	NC - cell biology AQA specification points: 4.2.1 - principles of organisation 4.2.2.1 - human digestive system NC - transport systems AQA specification points: 4.2.2.2 - the heart and blood vessels 4.2.2.3 - blood 4.2.3.1 - Plant tissues 4.2.3.2 - Plant organ systems Cross-curricular - P.E cardiovascular and respiratory system (yr 10 HT2)	NC Health, disease and the development of medicines AQA GCSE Biology 4.3 Cross-curricular: History Y10 Autumn 2, development of the smallpox vaccination.	NC Cell biology and Photosynthesis AQA GCSE Biology 4.4	NC Coordination and control AQA GCSE Biology 4.5 NC Ecosystems AQA GCSE Biology 4.7	AQA GCSE Biology 4.5 NC Ecosystems AQA GCSE Biology 4.7	

Chemistry	Bonding, Structure and Properties of Matter C3	Bonding, Structure and Properties of Matter C4	Chemical Changes C5	Chemical Changes C6 C7	Chemical Analysis C12	The rate and extent of chemical change C8 Chemistry of the atmosphere C13
Skills	The theories, properties, and technology about structures and materials.	Mathematical skills in Chemistry.	Formation of new substances in chemical reactions and using acid and alkalis to make salts.	Practically separating ions using electricity. How energy is gained and lost in reactions.	Practical analysis of metals and gases in Chemistry.	Factors affecting the rate of chemical reactions. The history, structure and development of the Earth's atmosphere.
Links	AQA 4.2 Bonding, Structure and the Properties of Matter. CURRICULUM LINKS: Computing - conductivity of materials	AQA 4.3 Quantitative Chemistry	AQA 4.4 Chemical Changes	AQA 4.4 Chemical Changes AQA 4.5 Energy Changes	AQA 4.8 Chemical Analysis	AQA 4.6 The Rate and Extent of Chemical Change
Physics	Energy P2	Electricity P4 P5	Electricity P5	Particle Model of Matter P6	Particle Model of Matter P6 Atomic Structure P7	
Skills	- Planning a practical (specific heat capacity) - Obtaining data - Plotting line graphs + determining the gradient of the line of best fit	Development of scientific ideas Extended writing Building simple circuits Recall and use of equations Required practicals resistance and I-V characteristics, Density	Complete electric circuits Using equations	Describing particle model and atomic structure Application of knowledge	Describing particle model and atomic structure Application of knowledge	
Links	(AQA SC) 4.1.1.3 - Energy changes in systems	4.1.2.1 Energy transfers in a system	Interpreting data Manipulation and application of equations	Atomic Structure NC: Structure of matter. Atomic Structure Cross-curricular - Technology (simple circuits) Year 10 HT3	Atomic Structure NC: Structure of matter. Atomic Structure Cross-curricular - Technology (simple circuits) Year 10 HT3	
Year 10 Separate Science						
Biology	Organisation B4	Infection and Response B5 , B6	Infection and response B7 Bioenergetics B8	Bioenergetics B8 B9 Homeostasis and	Homeostasis and Response B10 B11	Homeostasis and response B12 Ecology B16

				Response B10		
Skills	Making observations Drawing conclusions Dissection skills	Aseptic technique Calculating bacterial populations Evaluating scientific theories Interpretation of data History of drug development	Calculating rate-straight line equations Calculating percentage change Investigate the effect of exercise on heart rate	Investigating limiting factors rate of photosynthesis Testing reflex actions Measuring reaction times Interpretation of graphical data	Comparing and contrasting nervous to hormonal control Investigating newly germinated shoots Investigation- Field work	Interpretation of graphical data Investigation- Field work
Links	NC - cell biology AQA specification points: 4.2.1 - principles of organisation 4.2.2.1 - human digestive system NC - transport systems AQA specification points: 4.2.2.2 - the heart and blood vessels 4.2.2.3 - blood 4.2.3.1 - Plant tissues 4.2.3.2 - Plant organ systems Cross-curricular - P.E cardiovascular and respiratory system (yr 10 HT2)	NC Health, disease and the development of medicines AQA GCSE Biology 4.3 Cross-curricular: History Y10 Autumn 2, development of the smallpox vaccination.	NC Cell biology and Photosynthesis AQA GCSE Biology 4.4	NC Coordination and control AQA GCSE Biology 4.5 AQA GCSE Biology 4.7	NC Coordination and control AQA GCSE Biology 4.5	NC Coordination and control AQA GCSE Biology 4.5 NC Ecosystems
Chemistry	Bonding, structure and properties of matter C3 C4	Chemical Changes C5	Chemical Changes C6 Energy changes C7	The rate and extent of chemical change C8	Organic chemistry C9 C10 C11	Chemical Analysis C12
Skills	The theories, properties, and technology about structures and materials. Mathematical skills in Chemistry.	Formation of new substances in chemical reactions and using acid and alkalis to make salts.	Practically separating ions using electricity. How energy is gained and lost in reactions.	Factors affecting the rate of chemical reactions.	Factors affecting the rate of chemical reactions. The process of extracting oil and its uses. Practical analysis of metals and gases in Chemistry.	Practical analysis of metals and gases in Chemistry.
Links	AQA 4.2 Bonding, Structure and the Properties of Matter. AQA 4.3 Quantitative Chemistry CURRICULUM LINKS: Computing - conductivity of materials	AQA 4.4 Chemical Changes	AQA 4.4 Chemical Changes AQA 4.5 Energy Changes	AQA 4.6 The Rate and Extent of Chemical Change	AQA 4.6 The Rate and Extent of Chemical Change	AQA 4.8 Chemical Analysis

Physics	Energy P2 Electricity P4	Electricity P4 Electricity P5 Particle Model of Matter P6	Particle Model of Matter P6 Atomic Structure P7	Atomic Structure P7 Forces P8	Forces P8 P9 Forces P11	Forces P10
Skills	- Planning a practical (specific heat capacity) - Obtaining data - Plotting line graphs + determining the gradient of the line of best fit Development of scientific ideas Extended writing Building simple circuits Recall and use of equations Required practicals resistance and I-V characteristics, Density	Complete electric circuits Using equations	Describing particle model and atomic structure	Describing particle model and atomic structure Application of knowledge	Measuring angles Drawing parallelograms Interpreting graphs	Multi Step calculations Rearranging equations Interpreting data
Links	(AQA SC) 4.1.1.3 - Energy changes in systems 4.1.2.1 Energy transfers in a system	Interpreting data Manipulation and application of equations	Atomic Structure (Chemistry C1 and C2 NC: Structure of matter. Atomic Structure	NC: Structure of matter. Atomic Structure Radioactive decay	Extended writing Application and rearrangement of equations Drawing and interpreting graphs Required practicals force and extension and acceleration Cross-curricular: Maths / graph interpretation and calculation of speed Year 9 HT2 / Yr 10 HT3 Maths / Vectors, forces and motion Year 12 HT2	Extended writing Application and rearrangement of equations Drawing and interpreting graphs Required practicals force and extension and acceleration

Year 11 Combined Science / Trilogy

Biology	Ecology B17 Inheritance variation and evolution B13 B14	Inheritance, variation and evolution B15		Revision	Revision	
Skills	Interpretation of graphical data Investigation- Field work Modelling natural selection Use of qualitative data Evaluating use of GM Ethics of cloning	Discussing viewpoints Weighing evidence		How Science Works	How Science Works	
Links	AQA GCSE Biology 4.5 NC Ecosystems AQA GCSE Biology 4.7 NC Evolution, Inheritance and variation AQA GCSE Biology 4.6	NC Evolution, Inheritance and variation				

Chemistry		Chemistry of the atmosphere C13 Using Resources C14	The rate and extent of chemical change C9	Revision	Revision
Skills		The history, structure and development of the Earth's atmosphere. Extraction and use of the Earth's natural resources.	Factors affecting the rate of chemical reactions. The process of extracting oil and its uses. Practical analysis of metals and gases in Chemistry.	How Science Works	How Science Works
Links		AQA 4.9 Chemistry of the Atmosphere 4.10 Using Resources Cross-Curricular - Biology (environment / global warming) Year 11 HT1	AQA 4.6 The Rate and Extent of Chemical Change		
Physics	Forces P8 P9 Forces P10	Waves P12	Waves P12 P13 Electricity and Magnetism P15	Revision	Revision
Skills	Producing and interpreting graphs Rearranging and applying equations	Interpreting data Rearranging equations Multistep Calculations	Extended writing linkage of ideas and concepts Application and manipulation of mathematical equations Required practicals radiation and absorption, thermal insulation	How Science Works	How Science Works
Links		AQA SC: Topic 6 Waves Topic 7 Magnetism NC: Wave motion, Magnetism CURRICULUM LINKS: Computing : Electromagnetics with focus on WiFi (data)	AQA SC: Topic 6 Waves Topic 7 Magnetism NC: Wave motion, Magnetism CURRICULUM LINKS: Computing : Electromagnetics with focus on WiFi (data)		
Year 11 Separate Science					
Biology	Ecology B16 , B17 , B18	Inheritance, variation and evolution B13	Inheritance, variation and evolution B14 , B15	Revision	Revision

Skills	Discussing viewpoints Weighing evidence Investigation- Field work	Modelling natural selection Use of qualitative data Evaluating use of GM Ethics of cloning	Modelling natural selection Use of qualitative data Discussing viewpoints Weighing evidence Evaluating use of GM Ethics of cloning	How Science Works	How Science Works
Links	NC Evolution, Inheritance and variation NC Ecosystems AQA GCSE Biology 4.7	NC Evolution, Inheritance and variation AQA GCSE Biology 4.6	NC Evolution, Inheritance and variation AQA GCSE Biology 4.6		
Chemistry	Organic Chemistry C9 C10 Chemical Analysis C12	Organic Chemistry C11 Using Resources C14, C15	Using resources C15	Revision	Revision
Skills	Factors affecting the rate of chemical reactions. The process of extracting oil and its uses. Practical analysis of metals and gases in Chemistry.	Alkenes, Alcohols and other organic compounds. Production, uses and disposal of polymers.	Corrosion, alloys, ceramics and polymers Production, uses and disposal of polymers.	How Science Works	How Science Works
Links	AQA 4.6 The Rate and Extent of Chemical Change Alkenes, Alcohols and other organic compounds.	AQA 4.7 Organic Chemistry	AQA 4.7 Organic Chemistry		
Physics	Waves P12 P13 P14	Magnetism P15 Space P16 (GCSE Physics only)	Revision	Revision	Revision
Skills	Extended writing linkage of ideas and concepts Application and manipulation of mathematical equations Required practicals radiation and absorption, [thermal insulation and light (Physics only)]	Development of models and ideas of our universe throughout history A sense of scale and use of significant figures The importance of peer review when analysing and interpreting data	How Science Works	How Science Works	How Science Works
Links	AQA SC: Topic 6 Waves Topic 7 Magnetism and Electromagnetism NC: Wave motion, Magnetism and electromagnetism	AQA SC: Topic 7 Magnetism and Electromagnetism Topic 8 Space (Physics only) NC: Magnetism and electromagnetism and Space Physics CURRICULUM LINKS: Computing : Electromagnetics with focus on WiFi (data)			

