

Combined Science – Key Stage 4 Curriculum Overview

	HT1	HT2	HT3	HT4	HT5	HT6
Year 10	Energy Electricity Atomic Structure and Periodic Table Structures and Bonding Cells		Organisation Infection Particle nature of matter Chemical changes		Energy changes Nuclear Bioenergetics	
Cross Curricular Links	Electricity – GCSE Engineering – multimeters, circuits		- Infection – Y10 History – Health and the People - Organisation – Y10 GCSE PE, Anatomy and Physiology - Particles – Y9 Maths - density		- Bioenergetics – Y8 PE – fitness, Y9 PE breathing rates, Y10 GCSE PE – Respiration - Nuclear – Y9 History – 2nd World War	
Year 11 (Order depending on teacher pairs)	Quantitative chemistry Waves Rates of reaction Inheritance		Forces Electromagnetism Homeostasis Organic chemistry Chemical analysis		Ecology Using Earth's resources Atmosphere	
Cross Curricular Links	- Inheritance – Y9 Geography Restless planet (dinosaurs and extinction, human evolution) - Waves – Y9 History 2nd World War (Sonar, radar) - Waves – Y9 Geography – Restless planet		Forces – GCSE Engineering Hooke's Law and Young's modulus, velocity, acceleration		Atmosphere – Y7 Geography – Environment and resources, Y8 Geography Weather and climate, Y9 Glaciers and the Ice Age	

Mathematical Requirements in Science

Link stated is the **FIRST** time this is taught in maths, as these are taught frequently throughout the maths curriculum

1	Arithmetic and numerical computation
a	Recognise and use expressions in decimal form
b	Recognise and use expressions in standard form
c	Use ratios, fractions and percentages
d	Make estimates of the results of simple calculations

2	Handling data
a	Use an appropriate number of significant figures
b	Find arithmetic means
c	Construct and interpret frequency tables and diagrams, bar charts and histograms
f	Understand the terms mean, mode and median
g	Use a scatter diagram to identify a correlation between two variables
h	Make order of magnitude calculations

3	Algebra
a	Understand and use the symbols: =, <, <<, >>, >, $\propto$, ~
b	Change the subject of an equation
c	Substitute numerical values into algebraic equations using appropriate units for physical quantities
d	Solve simple algebraic equations

Y7 Maths 3 Place Value
Y8 Maths 4 Standard Form
Y7 Maths 11 Fractions, Decimals and Percentages
Y7 Maths 14 Numerical Reasoning

Y7 Maths 3 Place Value
Y7 Maths 5 Multiplication and division
Y7 Maths 4 Addition and Subtraction
Y7 Maths 3 Place Value, Y7 Maths 5 x and $\div$
Y8 Maths 15 Data Handling, scatter graphs, tables
Y8 Maths 10 Proportion and scale, 11 Enlargement

Y7 Maths 3 Place Value
Y8 Maths 8 Solving Equations
Y7 Maths 2 Algebraic notation, 10 Solving Equations, Y9 Maths 10 Financial Maths
Y8 Maths 8 Solving Equations

4	Graphs
a	Translate information between graphical and numeric form
b	Understand that $y = mx + c$ represents a linear relationship
c	Plot two variables from experimental or other data
d	Determine the slope and intercept of a linear graph
e	Draw and use the slope of a tangent to a curve as a measure of rate of change
f	Understand the physical significance of area between a curve and the x-axis and measure it by counting squares as appropriate

5	Geometry and trigonometry
a	Use angular measures in degrees
b	Visualise and represent 2D and 3D forms including two dimensional representations of 3D objects
c	Calculate areas of triangles and rectangles, surface areas and volumes of cubes

Y7 Maths 4 Addition and Subtraction, Y8 15 Data handling
Y9 Maths 2 The Cartesian Plane
Y8 Maths 15 Data handling
Y9 Maths 2 The Cartesian Plane
Y11 H 4 Non-linear graphs
Y11 F 3 Non- linear graphs, Y11 H 4 Non-linear graphs

Y7 Maths 12 Measuring and construction
Y7 Maths 5 x and $\div$, Y9 5 3D shapes
Y7 Maths 5 x and $\div$, Y9 5 3D shapes