

Intent:

Scientific understanding is vital for students to understand the world around them and to drive change in the world. We have designed a curriculum that ensures that students learn essential aspects of both scientific knowledge and skills, as well as fostering a sense of curiosity and creativity in the subject. Working backwards from where we wanted the students to be when they left our Trust, we have used GCSE (and, for our higher and advanced tiers, A level) criteria as well as our understanding of what it means to be (and think like) a real world scientist.

Scientific Knowledge (AO1 & 2):

- Atoms and Chemical Reactions
- Forces and fields
- Forces and their effects
- Energy stores and energy transfers
- Earth and the atmosphere
- Space
- Cells
- Competition and ecosystems
- Genetics
- Evolution

Scientific skills (AO1, 2 & 3):

- Predicting cause and effect
- Experiment design and risk assessment
- How and why we use scientific equipment
- Presenting, using and manipulating data
- Drawing conclusions
- Changing theories
- Real world use of Science
- Ethics and implications

Content knowledge is built upon using a spiral approach, with fundamentals of scientific understanding learnt first. Concepts are then revisited and built on with greater detail. New concepts which require foundational understanding are introduced later, and finally concepts requiring linking multiple scientific ideas are introduced. We have designed our curriculum so that both science-specific and general skills are developed through repeated experience, with each encounter being in the context of content of increasing complexity (also a spiral approach). Communication of ideas is central to becoming a confident Scientist, so our curriculum is designed to develop literacy and oracy through explicit teaching of keywords (in particular root words, prefixes and suffixes), and regular use of connective, discussion, experimental write up and exam command words. By using a three tiered curriculum model (Y7-11) with overlapping Bronze, Silver and Gold lesson outcomes it is possible for us to teach all students the same content and skills, providing support and challenge relative to their ability level, but also importantly allows students to move between tiers with ease. At A-level each lesson is differentiated into three outcomes.

Example:

LESSON OUTCOMES	CORE TIER	HIGHER TIER	ADVANCED TIER
Describe what a microscope does.	Bronze		
Define magnification and resolution	Silver	Bronze	
Compare light and electron microscopes.	Gold	Silver	Bronze
Explain how electron microscopy has increased understanding of cell parts.		Gold	Silver
Calculate magnification			Gold

Implementation:

Each term includes one of the three scientific disciplines, so students are revisiting Biology, Chemistry and Physics concepts regularly and frequently. Lessons work progressively through objectives, with multiple checkpoints for teachers and students to reflect on their knowledge and skills gained, and allowing teachers to adapt as necessary.

	Big ideas of Science ⁽¹⁾	Simplified idea	Key stage 2	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
Scientific Knowledge	All material in the Universe is made of very small particles.	Atoms and Chemical Reactions	States of matter (Y4) Properties and changes of materials (Y5)	C1b – Matter C3 - Acids and Bases	C4 – Periodic Table and reactions C5 – Chemical reactions C6 – Energy resources	C1 – Atomic structure and periodic table C2 – States of matter and mixtures C3 – Fuels and atmosphere B1 – Key concepts in Biology P3 – Particle model	C4 – Bonding and calculating mass C5 – Acids C5b - Qualitative Analysis (triple only) P5 – Electricity C6 – Metals and rates B6b – Key concepts 2 (triple only not WP)	C7 – Physical Chemistry C7b - Organic Chemistry (Triple) P7 – Radioactivity B9, C8 and P8 - Revision	M4 – Electrons, waves and photons M2 – Foundations in chemistry M3 – Periodic table and energy M4 – Core organic chemistry	M5 – Newtonian world and astrophysics M6 – Particles and medical physics M5 – Physical chemistry and transition elements M6 – Organic chemistry and analysis
	Objects can affect other objects at a distance.	Forces and fields	Forces (Y3&5)	P1b - Forces P2 – Space P3 - Light and Sound	P4 – Electricity and magnetism	P2 - Waves	P4 – Forces P6 – Magnetism and Electromagnetism P4b – Astronomy (triple only) P5 – Electricity	B9 and P8 - Revision	M3 – Forces and motion M4 – Electrons, waves and photons	M5 – Newtonian world and astrophysics M6 – Particles and medical physics
	Changing the movement of an object requires a net force to be acting on it.	Forces and their effects	Forces (Y3&5)	P1b - Forces	P6 - Motion	P1 – Energy	P4 – Forces P6 – Magnetism and Electromagnetism	B9 and P8 - Revision	M3 – Forces and motion	M5 – Newtonian world and astrophysics M6 – Particles and medical physics
	The total amount of energy in the Universe is always the same but energy can be transformed when things change or are made to happen.	Energy stores and energy transfers	Light (Y3&6) Sound (Y4) Electricity (Y4&6)	C2 – Fuels P3 - Light and Sound	P4 – Electricity and magnetism P5 – Heating and cooling	P1 – Energy P2 – Waves C3 – Fuels and atmosphere P3 – Particle model	C4 – Bonding and calculating mass P4 – Forces P5 – Electricity B6a – Plant structures and their functions P6 – Magnetism and Electromagnetism	C7 – Physical Chemistry P7b – Waves (triple only not WP) P7 - Radioactivity B9, C8 and P8 - Revision	M3 – Forces and motion M4 – Electrons, waves and photons M3 – Periodic table and energy	M5 – Newtonian world and astrophysics M6 – Particles and medical physics
	The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth's surface and its climate.	Earth and the atmosphere	Rocks (Y3) Earth and Space (Y5)		C6 – Energy resources P5 – Heating and cooling	C3 – Fuels and atmosphere	P4 – Forces (triple content) B6a – Plant structures and their functions C6 – Metals and rates	P7 – Radioactivity B9, C8 and P8 – Revision	M2 – Foundations in chemistry M3 – Periodic table and energy M4 – Core organic chemistry	M6 – Particles and medical physics M5 – Physical chemistry and transition elements M6 – Organic chemistry and analysis
	The solar system is a very small part of one of millions of galaxies in the Universe.	Space	Earth and Space (Y5)	P2 - Space		P2 - Waves	P4b – Astronomy (triple only)	P8 – Revision		M5 – Newtonian world and astrophysics
	Organisms are organised on a cellular basis.	Cells	Plants (Y3) Living things and their habitats (Y4)	B1b - Organs and health B2 – Reproduction	B4 – Microbiology	B1 – Key concepts in Biology B2 – Cells and control B3 – Exchange and transport in animals	B4a – Genetics B5 – Animal co-ordination, control and homeostasis B6 – Plant structures and their functions B6b – Key concepts 2 (triple only not WP)	B7 – Health and Disease B9 – Revision	M2 – Foundations in biology M3 – Exchange and transport M4 – Biodiversity, evolution and disease	M5 – Communication, homeostasis and energy Module 6 Genetics, evolution and ecosystems
	Organisms require a supply of energy and materials for which they are often dependent on or in competition with other organisms.	Competition and ecosystems	Plants (Y3) Living things and their habitats (Y5), Animals, including humans (Y3-6)	B3 - Ecology B1b - Organs and health	B6 – Organic energy	B3 – Exchange and transport in animals	B4b – Natural selection and GMO B6 – Plant structures and their functions	B8 Ecosystems and material cycles B9 – Revision	M3 – Exchange and transport M4 – Biodiversity, evolution and disease	M5 – Communication, homeostasis and energy M6 Genetics, evolution and ecosystems
	Genetic information is passed down from one generation of organisms to another.	Genetics	Plants (y3) Evolution and inheritance (Y6)	B2 - Reproduction	B5 - Genetics	B2 – Cells and control	B4a – Genetics B4b – Natural selection and GMO	B9 – Revision	M2 – Foundations in biology	M6 Genetics, evolution and ecosystems
The diversity of organisms, living and extinct, is the result of evolution.	Evolution	Evolution and inheritance (Y6)	B2 - Reproduction B3 - Ecology	B5 - Genetics		B4b – Natural selection and GMO	B8 Ecosystems and material cycles B9 – Revision	M4 – Biodiversity, evolution and disease	M6 Genetics, evolution and ecosystems	
Scientific Skills	Science assumes that for every effect there is one or more causes, and that scientific explanations, theories and models are those that best fit the facts known at a particular time.	Predicting cause and effect Experiment design and risk assessment How and why we use scientific equipment Presenting, using and manipulating data Drawing conclusions Changing theories	Working scientifically (Y5&6)	Intro to Science (B1a, C1a, P1) All topics present opportunities for explicit teaching of skills	All topics present opportunities for explicit teaching of skills	All topics present opportunities for explicit teaching of skills	All topics present opportunities for explicit teaching of skills	All topics present opportunities for explicit teaching of skills	All modules present opportunities for explicit teaching of skills	All modules present opportunities for explicit teaching of skills
	The knowledge produced by science is used in some technologies to create products to serve human ends.	Real world use of Science		All topics present opportunities for explicit teaching of skills	All topics present opportunities for explicit teaching of skills	All topics present opportunities for explicit teaching of skills	All topics present opportunities for explicit teaching of skills	All topics present opportunities for explicit teaching of skills	All modules present opportunities for explicit teaching of skills	All modules present opportunities for explicit teaching of skills
	Applications of science often have ethical, social, economic and political implications.	Ethics and implications		All topics present opportunities for explicit teaching of skills	All topics present opportunities for explicit teaching of skills	All topics present opportunities for explicit teaching of skills	All topics present opportunities for explicit teaching of skills	All topics present opportunities for explicit teaching of skills	All modules present opportunities for explicit teaching of skills	All modules present opportunities for explicit teaching of skills

1 – Harlen, W. (2010). Principles and big ideas of science education. Association for Science Education. (<https://www.ase.org.uk/bigideas>)

Denotes revisiting topics through review, application and extension

Scientific knowledge colours, link to the most represented specialism i.e. the first big idea has content from all specialisms, with chemistry being most represented. Therefore, this 'big idea' has been linked primarily to chemistry for the purpose of this document, but all units should be reviewed.

B1a/C1a/P1 Introduction to Science
Lab safety
Hazard symbols
Science equipment
Scientific investigation: prediction
Variables
results tables
methods
conclusion
graphing
Building on: w1 - Scientific enquiry (KS2)
Leading to: All science topics

B1b Organs and health
Cell structure
Microscopes
Organs
Healthy living
Nutrients
Testing for biomolecules
Building on: b1 - Living things and their habitats (KS2) b3 - Animals, including humans (KS2)
Leading to: Y8 B1b - Microbiology Y9 B1 - Key concepts Y10 B6b - Key concepts 2* Y11 B7 - Health and disease

B2 Reproduction
Gametes
Mammalian reproductive systems
Sexual intercourse
Foetal development
Puberty and the menstrual cycle
Plant reproduction
Building on: b1 - Living things and their habitats (KS2) b2 - Plants (KS2)
Leading to: Y8 B5 - Genetics Y9 B2 - Cells and control Y10 B4a - Genetics Y10 B5 - Animal coordination and homeostasis Y11 B7 - Health and disease

B3 Ecology
Classification
Sampling techniques
Predator and prey
Food chains and webs
Evolution by natural selection
Building on: b1 - Living things and their habitats (KS2) b4 - Evolution and inheritance (KS2)
Leading to: Y10 B4a - Genetics Y10 B4b - Natural selection and genetic modification Y11 B8 - Ecosystems and cycles

B4 Microbiology
Cell structure
Microscopes
Specialised cells
Microorganisms
Disease
Immunity
Vaccination
Building on: Y7 B1b - Organs and health Y7 B2 - Reproduction
Leading to: Y9 B1 - Key concepts Y9 B2 - Cells and control Y10 B6a - Plant structures and their functions Y10 B6b - Key concepts 2* Y11 B7 - Health and disease

B5 Genetics
Variation
DNA and chromosomes
Genetic crosses
Sexual and asexual reproduction
Cloning
Selective breeding
Genetic engineering
Building on: b4 - Evolution and inheritance (KS2) Y7 B2 - Reproduction
Leading to: Y9 B2 - Cells and control Y10 B4a - Genetics Y10 B4b - Natural selection and GMO

B6 Organic energy
Plant structure
Photosynthesis
Limiting factors
Respiration
Digestion
Breathing
Circulatory system
Healthy living
Building on: b2 - Plants (KS2) b3 - Animals, including humans (KS2)
Leading to: Y7 B1b - Organs and health Y7 B2 - Reproduction Y9 B3 - Exchange and transport in animals Y10 B6a - Plant structures and their functions Y10 B5 - Animal coordination and homeostasis Y11 B8 - Ecosystems and material cycles

B1 Key concepts
Cell structure
Specialised cells
Microscopes
Enzymes
Diffusion
Active transport
Osmosis
Building on: Y7 B1b - Organs and health Y8 B4 - Microbiology Y8 B6 - Organic energy
Leading to: All future biology content

B2 Cells and control
Cell division
Stem cells
Nervous system
Specialised cells
Differentiation
Building on: Y7 B2 - Reproduction Y8 B4 - Microbiology Y9 B1 - Key concepts
Leading to: Y10 B4a - Genetics Y11 B7 - Health and disease

B3 Exchange and transport in animals
SA:V
Circulatory system
Breathing
Respiration
Building on: Y7 B1b - Organs and health Y8 B6 - Organic energy
Leading to: Y10 B6 - Plants structure and their function Y10 B5 - Animal coordination and homeostasis Y11 B7 - Health and disease

B4a Genetics
DNA structure
Cell division
Key genetics terms
Explaining inheritance
variation
mutations
HGP
Protein synthesis*
Sexual and asexual reproduction*
Building on: Y7 B2 - Reproduction Y8 B5 - Genetics Y9 B1 - Key concepts
Leading to: Y10 B4b - Natural selection and genetic modification Y11 B7 - Health and disease

B4b Natural selection and GMO
Evolution by natural selection
Human evolution
Classification
Selective breeding
Genetic engineering
Tissue culture*
Building on: Y7 B3 - Ecology Y8 B5 - Genetics Y10 B4a - Genetics
Leading to: Y11 B7 - Health and disease

B5 Animal coordination and homeostasis
Hormones
Menstrual cycle
Contraception
ART
Homeostasis: blood glucose concentration, thermo-regulation*, osmoregulation*
Diabetes
Healthy living
Urinary system*
Building on: Y7 B1b - Organs and health Y7 B2 - Reproduction Y8 B6 - Organic energy Y9 B1 - Key concepts Y9 B3 - Exchange and transport in animals
Leading to: Y10 B6a - Plant structures and their functions Y11 B7 - Health and disease

B6 Plant structure and their function
Photosynthesis
Limiting factors
Plant transport
Specialised cells/tissues
Transpiration
Translocation
Leaf structure*
Plant hormones*
Plant adaptations*
Building on: Y7 B2 - Reproduction Y8 B1b - Microbiology Y8 B6 - Organic energy Y9 B1 - Key concepts Y9 B2 - Cells and control Y10 B5 - Animal coordination and homeostasis
Leading to: Y11 B7 - Health and disease Y11 B8 - Ecosystems and cycles

B6b Key concepts 2*
Brain
Eye
Testing for biomolecules
Calorimetry
Building on: Y7 B1b - Organs and health Y9 B1 - Key concepts
Leading to: Y10 B5 - Animal coordination and homeostasis
Leading to: Y11 B8 - Ecosystems and cycles

B7 Health and disease
Healthy living
Non-communicable diseases
Communication diseases
Virus lifecycle*
STIs
Immune system
Immunisation
Plant defence: pests and pathogens*
Antibiotics
Aseptic technique*
Monoclonal antibodies*
Building on: Y7 B1b - Organs and health Y7 B2 - Reproduction All Y8 biology Y9 B1 - Key concepts Y10 B4a - Genetics Y10 B4b - Natural selection and GMO Y10 B6a - Plant structures and their functions
Leading to: Y11 B9 - Revision

B8 Ecosystems and material cycles
Ecosystems: biotic and abiotic
Sampling techniques
Energy transfer between trophic levels*
Biodiversity
Food security*
Material cycles: water, carbon, nitrogen
Indicator species*
Decomposition
Building on: Y7 B3 - Ecology Y8 B6 - Organic energy
Leading to: Y11 B9 - Revision

Year 7

C1b Matter
Matter Change of State Atom, element, compound, mixture, solution Chromatography
Building on: c2 - States of matter (KS2) c3 - Properties and changes of materials (KS2)
Leading to: All chemistry topics

C2 Fuels
Scientific investigation Energy content
Building on: Y7 C1a - Introduction to science Y7 C1b - Matter
Leading to: Y8 C6 - Energy resources Y9 C3 - Fuels and atmosphere Y9 P1 - Energy Y11 C7 - Physical chemistry

C3 Acids and bases
Hazard symbols Acids and bases pH scales Neutralisation
Building on: c3 - Properties and changing materials (KS2) Y7 C1b - Matter
Leading to: Y8 C4 - Periodic table Y9 C3 - Fuels and atmosphere Y10 C5 - Acids

Year 8

C4 Periodic table
Atom, element, compound, mixture, solution Periodic table Metals and non-metals Chemical equations Reactions with metals (oxygen, water, acid) Reactivity
Building on: c2 - States of matter (KS2) c3 - Properties and changing materials (KS2) Y7 C1b - Matter Y7 C3 - Acids and bases
Leading to: All chemistry topics

C5 Chemical reactions
Chemical and physical changes Using reactivity series Speeding up chemical reactions Electrolysis
Building on: c2 - States of matter (KS2) c3 - Properties and changing materials (KS2) Y7 C1b - Matter Y8 C4 - Periodic table
Leading to: All chemistry topics

C6 Energy resources
Gas tests: oxygen and carbon dioxide Fire safety Combustion Fossil fuels Pollution Greenhouse effect Energy sources
Building on: c1 - Rocks (KS2) c3 - Properties and changing materials (KS2) b1 - Living things and their habitats Y7 C2 - Fuels Y8 C5 - Chemical reactions
Leading to: Y9 C3 - Fuels and atmosphere Y11 C7 - Physical chemistry

Year 9

C1 Atomic structure and periodic table
Atomic structure Periodic table Isotopes Electronic configuration Group 0, 1, and 7 Displacement reactions Balancing equations
Building on: Y7 C1b - Matter Y8 C4 - Periodic table Y8 C5 - Chemical reactions
Leading to: All chemistry topics

C2 Separating techniques
States of matter Separation techniques: filtration crystallisation chromatography distillation Purifying water
Building on: Y7 C1b - Matter Y8 C4 - Periodic table Y8 C5 - Chemical reactions Y9 C1 - Atomic structure and periodic table
Leading to: Y9 C3 - Fuels and atmosphere Y10 C5 - Acids Y10 C5b - Qualitative chemistry* Y10 C6 - Metals and rates Y11 C7 - Physical chemistry

C3 Fuels and atmosphere
Oil Fractional distillation Combustion Fuels Changing atmosphere Greenhouse effect Testing gases
Building on: All chemistry topics Y8 P5 Heating and cooling Y9 P1 - Energy
Leading to: Y11 C7 - Physical chemistry Y11 C7b - Organic chemistry*

Year 10

C4 Bonding and calculating masses
Atomic structure Ions Ionic bonding: compounds and formulae Covalent bonding Metallic bonding Dot and cross diagrams RFM and RAM Empirical formula Calculations involving masses (moles) Calculations involving gases (moles)* Yields* Atom economy* Chemical equations Balancing equations
Building on: Y7 C1b - Matter Y8 C4 - Periodic table Y8 C5 - Chemical reactions Y9 C1 - Atomic structure and periodic table
Leading to: All chemistry topics

C5 Acids
Acids and bases pH scale Neutralisation Titration* Synthesis of pure, dry salts Solubility Precipitation reaction Electrolysis Half equations
Building on: Y7 C1b - Matter Y7 C3 - Acids and bases Y8 C4 - Periodic table Y8 C5 - Chemical reactions Y9 C1 - Atomic structure and periodic table Y10 C4 - Bonding and calculating masses
Leading to: Y10 C6 - Metals and rates Y11 C7 - Physical chemistry Y11 C7b - Organic chemistry*

C5b Qualitative chemistry*
Testing cations and anions Physical properties of materials Nanoparticles
Building on: Y7 C1b - Matter Y8 C4 - Periodic table Y8 C5 - Chemical reactions Y9 C1 - Atomic structure and periodic table Y10 C4 - Bonding and calculating masses
Leading to: Y11 C7 - Physical chemistry

C6 Metals and rates
Reactivity of metals Metals reactions (water, salt solutions and acids) Ionic equations (REDOX) Oxidation and reduction Displacement reactions Metal extraction Metal recycling Transition metals* Metal corrosion* Alloys*
Building on: Y7 C1b - Matter Y8 C4 - Periodic table Y8 C5 - Chemical reactions Y9 C1 - Atomic structure and periodic table Y10 C4 - Bonding and calculating masses Y10 C5 - Acids
Leading to: Y11 C7 - Physical chemistry Y11 C7b - Organic chemistry*

Year 11

C7 Physical chemistry
Endothermic and exothermic reactions Energy profiles Equilibrium and reversible reactions Haber process Half equations Ionic compound properties (structure and bonding) Electrolysis REDOX Fertilisers* Fuel cells*
Building on: All chemistry topics
Leading to: Y11 C8 - Revision

C7b Organic chemistry*
Hydrocarbons Polymers Alcohols Carboxylic acids
Building on: Y7 C2 - Fuels Y9 C3 - Fuels and atmosphere Y10 C4 - bonding and calculating masses
Leading to: Y11 C8 - Revision

Year 7

P2 Force and space
Days, months, seasons, and years Gravity Mass and weight Balanced and unbalanced forces
Building on: p1 - Earth and space (KS2) p2 - Forces and magnets (KS2)
Leading to: Y8 P6 - Motion Y9 P1 - Energy Y10 P4 - Forces Y10 P4b - Astronomy*

P3 Light and Sound
Properties of light Reflection Refraction Colour Wave properties: frequency and amplitude Properties of sound
Building on: p3 - Light (KS2) p4 - Sound (KS2)
Leading to: Y9 P2 - Waves Y11 P7 - Radioactivity Y11 P7b - Waves 2*

Year 8

P4 Heating and cooling
Temperature Heat Energy transfer: Conduction Convection Radiation Heat's effect on particles
Building on: c3 - Properties and changes of materials (KS2)
Leading to: All Y9 physics topics Y10 P4b - Astronomy* Y11 P7 - Radioactivity

P5 Electricity and magnetism
Circuits: parallel and series Current Voltage/potential difference Conductors and insulators Magnets Magnetic fields Electromagnets
Building on: p2 - Forces and magnets (KS2) p5 - Electricity (KS2)
Leading to: Y10 P5 - Electricity Y10 P6 - Magnetism and electromagnetism

P6 Motion
Graphing and SI units Speed calculations Distance/time graphs Acceleration Air resistance
Building on: p2 - Forces and magnets (KS2)
Y7 P2 - Forces and space
Leading to: Y10 P4 - Forces

Year 9

P1 Energy
Energy types and waste Efficiency Work Power GPE/KE Energy resources
Building on: Y7 P2 - Forces and space Y8 P4 - Heating and cooling
Leading to: Y9 P3 - Particle model Y10 P5 - Electricity Y11 P7 - Radioactivity

P2 Waves
Wave properties Wave speed Refraction EM spectrum: properties, uses, dangers
Building on: Y7 P3 - Light and sound
Leading to: Y11 P7 - Radioactivity Y11 P7b - Waves 2*

P3 Particle model
States of matter Density Specific latent heat Specific heat capacity Gases: temperature and pressure
Building on: Y7 C1b - States of matter Y8 P4 - Heating and cooling Y8 C5 - Chemical reactions Y9 P1 - Energy Y8 C5 - Chemical reactions
Leading to: Y10 P4 - Forces

Year 10

P4 Forces
Balanced and unbalanced forces Vectors diagrams Distance/time graphs Acceleration Velocity/time graphs Newton's Laws (1-3) Momentum Car safety: momentum, braking, energy Elastic and inelastic distortions Hooke's Law Turning forces* Pressure* Upthrust*
Building on: Y7 P2 - Forces and space Y8 P4 - Heating and cooling Y8 P6 - Motion Y9 P3 - Particle model
Leading to: Y10 P4b - Astronomy* Y10 P6 - Magnetism and electromagnetism

P4b Astronomy*
Gravity Solar system Orbits Theories of the universe Doppler effect Life cycle of stars
Building on: Y7 P2 - Forces and space Y9 P1 - Energy Y10 P4 - Forces
Leading to: Y11 P7 - Radioactivity Y11 P7b - Waves 2*

P5 Electricity
Atomic structure Circuits Current Potential difference Resistance Electrical components Electrical energy Power AC/DC Electrical safety at home Electric fields* Static electricity*
Building on: Y8 P5 - Electricity and magnetism Y9 P1 - Energy
Leading to: Y10 P6 - Magnetism and electromagnetism

P6 Magnetism and electromagnetism
Magnetism Magnetic fields Electromagnets Magnetic forces Transformers Induction*
Building on: Y8 P5 - Electricity and magnetism Y10 P4 - Forces Y10 P5 - Electricity
Leading to: Y11 P8 - Revision

Year 11

P7 Radioactivity
Atomic structure Electrons and orbits gamma, background, dangers, users* Radioactive decay Half life Nuclear energy* Fission and fusion*
Building on: Y7 P3 - Light and sound Y8 P4 - Heating and cooling Y9 P1 - Energy Y9 P2 - Waves Y10 P4b - Astronomy*
Leading to: Y11 P8 - Revision

P7b Waves 2*
Wave properties and TIR Lenses Blackbody radiation Sound properties Ear
Building on: Y7 P3 - Light and sound Y9 P2 - Waves Y10 P4b - Astronomy*
Leading to: Y11 P8 - Revision

Curriculum structure

Term	7.1	7.2	7.3	8.1	8.2	8.3
	Intro to science – practical skills					
Biology	B1a Intro to biology B1b Organs and health	B2 Reproduction	B3 Ecology	B4 Microbiology	B5 Genetics	B6 Organic energy
Chemistry	C1a Intro to chemistry C1b Matter	C2 Fuels	C3 Acids and bases	C4 Periodic table and reactions	C5 Chemical reactions	C6 Energy resources
Physics	P1 Intro to physics	P2 Forces and space	P3 Light and sound	P4 Electricity & magnetism	P5 Heating and cooling	P6 Motion

Term	9.1	9.2	9.3	10.1	10.2	10.3	11.1	11.2	11.3
Biology	B1 - Key concepts in biology	B2 Cells and control	B3 Exchange and transport in animals	B4a Genetics B4b Natural selection and GMO	B5 Animal Coordination control and homeostasis	B6 Plant structures and their functions B6b Key concepts 2 (triple only not WP)	B7 Health and disease B8 Ecosystems and material cycles	B9 Revision	B9 Revision
Chemistry	C1 - Atomic Structure and Periodic Table	C2 - Separation Techniques	C3 Fuels and Atmosphere	C4 – Bonding and calculating mass	C5 – Acids C5b – Qualitative chemistry (triple only)	C6 - Metals and Rates	C7 - Physical Chemistry C7b - Organic Chemistry (Triple only)	C8 - Revision	C8 - Revision
Physics	P1 - Energy	P2 - Waves	P3 Particle Model	P4 – Forces P4b – Astronomy / Space (triple only)	P5 - Electricity	P6 – Magnetism and electromagnetism	P7 – Radioactivity P7b - Waves 2 (triple only not WP)	P8 - Revision	P8 - Revision