NOTTINGHAM GIRLS' ACADEMY

Science Curriculum

Purpose of Study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Aims

The Nottingham Girls' Academy curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

Scientific knowledge and conceptual understanding

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition (such as between primary and secondary school), build up serious misconceptions, and/or have significant difficulties in understanding higher-order content.

Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The social and economic implications of science are important but, generally, they are taught most appropriately within the wider school curriculum: teachers will wish to use different contexts to maximise their pupils' engagement with and motivation to study science.

The nature, processes and methods of science

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. The notes and guidance give examples of how 'working scientifically' might be embedded within the content of biology, chemistry and physics, focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data. 'Working scientifically' will be developed further at key stages 3 and 4, once pupils have built up sufficient understanding of science to engage meaningfully in more sophisticated discussion of experimental design and control.

Curriculum-at-a-Glance: Science

Combined Science	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Year 10	B1 Cells C3 Quantitative chemistry	B2 Organisation C4 Chemical changes	P2 Electricity B3 Infection & response	B4 Bioenergetics C5 Energy changes	P5 Forces	B5 Homeostasis C6 Rates
	GCSE topics in Year 10 & Year 11 are often taught in rotation in order to enhance practical opportunities and to allow specialist staff to maximise student potential.					
Year 11	B6 Inheritance C7 Organic P6 Waves	C8 Chemical analysis C9 Atmosphere	B7 Ecology P7 Electromagnetism	C10 Using resources	Revision & examinations	Revision & examinations
Biology GCSE	**Half Term 1**	**Half Term 2**	**Half Term 3**	**Half Term 4**	**Half Term 5**	**Half Term 6**
Year 10	B1 Cells	B2 Organisation	B3 Infection & response	B3 Infection & response	B4 Bioenergetics	B5 Homeostasis
Year 11	B5 Homeostasis	B6 Inheritance	B7 Ecology	Practical revision	Revision & examinations	Revision & examinations
Chemistry GCSE	**Half Term 1**	**Half Term 2**	**Half Term 3**	**Half Term 4**	**Half Term 5**	**Half Term 6**
Year 10	C3 Quantitative chemistry	C4 Chemical changes		C5 Energy changes		C6 Rates
Year 11	C7 Organic	C8 Chemical analysis	C9 Atmosphere	C10 Using resources Practical revision	Revision & examinations	Revision & examinations
Physics GCSE	**Half Term 1**	**Half Term 2**	**Half Term 3**	**Half Term 4**	**Half Term 5**	**Half Term 6**

Year 10	**P2 Electricity**	**P2 Electricity**	**P5 Forces**	**P5 Forces**	**P5 Forces**	**P6 Waves**
Year 11	**P6 Waves**	**P7 Electromagnetism**	**P8 Space**	**Practical revision**	**Revision & examinations**	**Revision & examinations**

Year 10 Science

Knowledge, Qualifications and Assessment
What pupils will study during Year 10, our ambition for the knowledge they retain and subject specific skill they will develop and how learning will be assessed formatively and summatively.

Please note: Specific GCSE working scientifically (WS) skills (Chapter 3) and maths (MS) skills (Chapter 7) and can be found in more detail by clicking the links to the relevant AQA Specifications listed below:			
Biology only	**Chemistry only**	**Physics only**	**Combined Science**

Learning Challenge *What will pupils produce at the end of a unit to demonstrate their learning?*	*Students are assessed formatively throughout each topic to ensure understanding. They are encouraged to write, discuss and practice using their prior and developing knowledge in both theory and practical lessons. Y7 knowledge builds upon KS2 science, Y8 builds upon Y7 science etc.* *The challenges take the form of Checkpoint activities which inform the students of What Went Well (WWW), along with an Even Better If/Direct Response Task (EBI/DRT).*
Learning Consolidation *What prior learning will pupils consolidate using spaced retrieval and spaced practice?*	*Staff use various methods to tie in and retrieve knowledge from across the science spectrum of topics throughout the journey, however up to 10 minutes of retrieval is expected at the beginning of every lesson.* *The main assessment is completed at the end of the following topic. This allows familiarisation with revision techniques and opportunities to practice retrieval skills. Students will sit either a higher or foundation exam-style test and receive a Step point along with a directed task (DRT) to aid improvement.*

Topics may be taught on a rota basis to maximise practical opportunities. See the teaching rota for more specific information (hyperlink here).
Content below is for Combined Science, however sections highlighted in green, yellow and blue shows the extra topics encountered in the single sciences (Triple science)

Unit Title	***Periods***	***Learning Journey*** *What knowledge and subject specific skills will pupils learn in order to complete the Learning Challenge?*
Biology 4.1 Cell Biology 4.1.1 Cell Structure	***8***	Eukaryotes and prokaryotes Animal cells and plant cells WS 1.2 Cell specialisation Cell differentiation Microscopy WS 1.1, 4.4 MS 1a, 1b, 2h, 3b Culturing microorganisms MS 1a, 1b, 1d, 2a, 2h, 5c, WS 2.2, 2.4
Biology 4.1 Cell Biology 4.1.2 Cell division	***3***	Chromosomes WS 1.2 Mitosis and the cell cycle Stem cells WS 1.3
Biology 4.1 Cell Biology 4.1.3 Transport in cells	***4***	Diffusion WS 1.2, 1.5, MS 1c, 5c Osmosis WS 1.2, MS 1a, 1c, 4a, 4b, 4c, 4d Active transport

Biology 4.2 Organisation 4.2.1 Principles of organisation	***1***	Principals of organisation MS 1c
Biology 4.2 Organisation 4.2.2 Animal tissue, organs and organ systems	***14***	The human digestive system MS 1a, 1c, WS 1.2 The heart and blood vessels MS 1a, 1c Blood WS 1.5, 3.5 Coronary heart disease: a non-communicable disease WS 1.3, 1.4 Health issues MS 2c, 2d, 2g, 4a The effect of lifestyle on some non-communicable diseases WS 1.5, MS 2c, 2d, 2g, 4a Cancer
Biology 4.2 Organisation 4.2.3 Plant tissue, organs and systems	***3***	Plant tissues Plant organ systems MS 1a, 1c, 2a, 2c, 2d, 4a, 4c, 5c
Biology 4.3 Infection & response 4.3.1 Communicable diseases	***10***	Communicable (infectious) disease WS 1.4 Viral diseases Bacterial diseases Fungal diseases Protist diseases Human defence systems Vaccination WS 1.4 Antibiotics and painkillers WS 1.4 Discovery and development of drugs WS 1.6
Biology 4.3 Infection & response 4.3.2 Monoclonal antibodies	***2***	Producing monoclonal antibodies (HT) WS 1.3, 1.5 Uses of monoclonal antibodies (HT)
Biology 4.3 Infection & response 4.3.3 Plant disease	***2***	Detection and identification of plant diseases WS 1.4 Plant defence responses
Biology 4.4 Bioenergetics 4.4.1 Photosynthesis	***5***	Photosynthetic reaction Rate of Photosynthesis MS 1a, 1c, 2c, 3a, 3d, 4a, 4c WS 1.4 Uses of glucose from photosynthesis
Biology 4.4 Bioenergetics 4.4.2 Respiration	***5***	Aerobic and anaerobic respiration Response to exercise Metabolism
Chemistry 5.3 Quantitative Chemistry 5.3.1 Chemical measurements, conservation of mass and the quantitative interpretation of chemical equations	***4***	Conservation of mass and balanced chemical equations WS 1.2 Relative formula mass Mass changes with gases Chemical measurements WS 3.4
Chemistry 5.3 Quantitative Chemistry 5.3.2 Use of amount of substance in relation to masses of pure substances	***6***	Moles (HT only) WS 4.1, 4.2, 4.3, 4.5, 4.6 MS 1a, 1b, 1c, 2a, 3a, 3b Amounts of substance in equations (HT only) MS 1a, 1c, 3b, 3c Using moles to balance equations (HT only) MS 3b, 3c Limiting reactants (HT only) WS 4.1 Concentrations of solutions (HT only) MS 1c, 3b
Chemistry 5.3 Quantitative Chemistry	***2***	Percentage yield WS 4.2, 4.6, MS 1c, 2a, 3b

5.3.3 Yield & atom economy		Atom economy WS 4.2, 4.6, MS 1c, 3b
Chemistry 5.3 Quantitative Chemistry 5.3.4 Using concentrations	***2***	Concentrations in moldm^{-3} WS 4.2, 4.3, 4.6, MS 1c, 3b, 3c
Chemistry 5.3 Quantitative Chemistry 5.3.5 Amount of substance & gases	***2***	Amount of substance & volumes of gases WS 1.2, 4.1, 4.2, 4.3, 4.6 MS 1a, 1c, 3b, 3c
Chemistry 5.4 Chemical changes 5.4.1 Reactivity of metals	***4***	Metal oxides Reactivity series Extraction of metals & reduction Oxidation & reduction in terms of electrons (HT only)
Chemistry 5.4 Chemical changes 5.4.2 Reactions of acids	***8***	Reactions of acids & metals Neutralisation of acids and salt production Soluble salts The pH scale and neutralisation Titrations Strong & weak acids (HT only) MS 2h
Chemistry 5.4 Chemical changes 5.4.3 Electrolysis	***6***	The process of electrolysis Electrolysis of ionic compounds Using electrolysis to extract metals Electrolysis of aqueous solutions WS 1.2 Representation of reactions at electrodes as half equations (HT only)
Chemistry 5.5 Energy changes 5.5.1 Exothermic & endothermic reactions	***5***	Energy transfer during endothermic & exothermic reactions Reaction profiles The energy change in reactions (HT only) MS 1a
Chemistry 5.5 Energy changes 5.5.2 Chemical cells & fuel cells	***2***	Cells & batteries Fuel cells
Physics 6.2 Electricity 6.2.1 Current, potential difference and resistance	***8***	Standard circuit diagram symbols WS 1.2 Electrical charge and current MS 3b, 3c Current, resistance and potential difference MS 3b, 3c Resistors WS 1.2, 1.4, MS 4c, 4d, 4e
Physics 6.2 Electricity 6.2.2 Series and parallel circuits	***3***	Series and parallel circuits MS 1c, 3b, 3c, 3d WS 1.4
Physics 6.2 Electricity 6.2.3 Domestic uses and safety	***3***	Direct and alternating potential difference Mains electricity WS 1.5
Physics 6.2 Electricity 6.2.4 Energy transfers	***3***	Power MS 3b, 3c, WS 4.5 Energy transfers in everyday appliances MS 3b, 3c, WS 1.2, 1.4 The National Grid WS 1.4
Physics 6.2 Electricity 6.2.5 Static electricity	***2***	Static charge Electric fields WS 1.2, 1.5

Year 11 GCSE Science

Knowledge, Qualifications and Assessment
What pupils will study during Year 11, our ambition for the knowledge they retain and subject specific skill they will develop and how learning will be assessed formatively and summatively.

Please note: Specific GCSE working scientifically (WS) skills (Chapter 3) and maths (MS) skills (Chapter 7) and can be found in more detail by clicking the links to the relevant AQA Specifications listed below:			
Biology only	**Chemistry only**	**Physics only**	**Combined Science**

Learning Challenge *What will pupils produce at the end of a unit to demonstrate their learning?*	*Students are assessed formatively throughout each topic to ensure understanding. They are encouraged to write, discuss and practice using their prior and developing knowledge in both theory and practical lessons. Y7 knowledge builds upon KS2 science, Y8 builds upon Y7 science etc.* *The challenges take the form of Checkpoint activities which inform the students of What Went Well (WWW), along with an Even Better If/Direct Response Task (EBI/DRT).*
Learning Consolidation *What prior learning will pupils consolidate using spaced retrieval and spaced practice?*	*Staff use various methods to tie in and retrieve knowledge from across the science spectrum of topics throughout the journey, however up to 10 minutes of retrieval is expected at the beginning of every lesson.* *The main assessment is completed at the end of the following topic. This allows familiarisation with revision techniques and opportunities to practice retrieval skills. Students will sit either a higher or foundation exam-style test and receive a Step point along with a directed task (DRT) to aid improvement.*

Topics may be taught on a rota basis to maximise practical opportunities. See the teaching rota for more specific information (hyperlink here)

Unit Title	***Periods***	***Learning Journey*** *What knowledge and subject specific skills will pupils learn in order to complete the Learning Challenge?*
Biology 4.5 **Homeostasis and response** *4.5.1 Homeostasis*	***1***	Homeostasis MS 2c, 4a
Biology 4.5 **Homeostasis and response** *4.5.2 The human nervous system*	***7***	Structure and function ('The human nervous system' for combined) The brain WS 1.5 The eye WS 1.2, 1.4 Control of body temperature
Biology 4.5 **Homeostasis and response** *4.5.3 Hormonal coordination in humans*	***9***	Human endocrine system Control of blood glucose concentration WS 1.3, MS 2c Maintaining water and nitrogen balance in the body MS 4a, WS 1.4, 1.5 Hormones in human reproduction MS 2c Contraception WS 1.3, 1.4 The use of hormones to treat infertility (HTonly) WS 1.1, 1.3, 1.4

		Negative feedback (HTonly) WS 1.2, MS 2c
Biology 4.5 **Homeostasis and response** *4.5.4 Plant Hormones*	***3***	Control and coordination Use of plant hormones (HT only) WS 1.3, 1.4
Biology 4.6 **Inheritance, variation and Evolution** *4.6.1 Reproduction*	***10***	Sexual and asexual Reproduction Meiosis WS 1.2 Advatanges and disadvantages of sexual and asexual reproduction WS 1.1 DNA and the Genome WS 1.1, 1.4 DNA structure WS 1.2 Genetic Inheritance MS 1c, 2c, 2e, 3a, 4a WS 1.2 Inherited Disorders WS 1.3 Sex determination MS 1c, 3a
Biology 4.6 **Inheritance, variation and evolution** *4.6.2 Variation and evolution*	***7***	Variation Evolution WS 1.2 Selective breeding WS 1.3, 1.4 Genetic engineering WS 1.3, 1.4 Cloning WS 1.3 1.4
Biology 4.6 **Inheritance, variation and evolution** *4.6.3 The development of understanding of genetics and evolution*	***10***	Theory of evolution WS 1.1, 1.3 Speciation WS 1.1 The understanding of genetics WS 1..1 Evidence for evolution WS 1.3 Fossils MS 2c, 4a WS 1.1, 1.3 Extinction Resistant bacteria
Biology 4.6 **Inheritance, variation and evolution** *4.6.4 Classification of living organisms*	***1***	Classification of living organisms WS 1.1, 1.2
Biology 4.7 Ecology *4.7.1 Adaptions, interdependence and competition*	***5***	Communities WS 2.6 MS 2c, 4a Abiotic factors WS 1.2 MS 2c, 4a Biotic factors WS 1.2 MS 2c, 4a Adaptations
Biology 4.7 Ecology *4.7.2 Organisation of an ecosystem*	***6***	Levels of Organisation WS 1.2 MS 2b, 2f, 4a, 4c How materials are cycled WS 1.2 Decomposition MS 1c, 4a, 4c Impact of environmental change (HT only)
Biology 4.7 Ecology *4.7.3 Biodiversity and the effect of human interaction on ecosystems*	***7***	Biodiversity WS 1.4 Waste management Land use WS 1.4, 1.5 Deforestation WS 1.4 Global warming WS 1.6, 1.3 Maintaining biodiversity WS 1.4, 1.5
Biology 4.7 Ecology	***4***	Trophic levels

4.7.4 Trophic levels in an ecosystem		Pyramids of Biomass WS 1.2, MS 2c Transfer of Biomass MS 1c Factors affecting food security WS 1.4
Biology 4.7 Ecology *4.7.5 Food production*	***3***	Farming techniques WS 1.3, 1.4 Sustainable fisheries WS 1.4 Role of biotechnology
Chemistry 5.6 The rate and extent of chemical change *5.6.1 Rate of reaction*	***6***	Calculating rates of reactions MS 1a, 1c, 1d, 4a, 4b, 4c, 4d, 4e Factors which affect the rate of chemical reactions Collision theory and activation energy WS 1.2 MS 1c, 5c Catalysts
Chemistry 5.6 The rate and extent of chemical change *5.6.2 Reversible reactions and dynamic equilibrium*	***8***	Reversible reactions Energy changes & reversible reactions Equilibrium WS 1.2 The effect of changing conditions on equilibrium (HT only) The effect of changing concentration (HT only) The effect of temperature on equilibrium (HT only) The effect of pressure changes on equilibrium (HT only)
Chemistry 5.7 Organic Chemistry *5.7.1 Carbon compounds as fuels and feedstock*	***5***	Crude oil, hydrocarbons and alkanes WS 1.2 Fractional distillation and petrochemicals WS 1.2 Properties of hydrocarbons WS 1.2, 4.1 Cracking and alkenes WS 1.2
Chemistry 5.7 Organic Chemistry *5.7.2 Reactions of alkenes and alcohols*	***6***	Structure and formulae of alkenes WS 1.2, MS 5b Reactions of alkenes WS 1.2 Alcohols Carboxylic acids
Chemistry 5.7 Organic Chemistry *5.7.3 Synthetic and naturally occurring polymers*	***6***	Addition polymerisation WS 1.2 MS 5b Condensation polymerisation (HT only) WS 1.2 MS 5b Amino acids (HT only) DNA & other natural polymers
Chemistry 5.8 Chemical analysis 5.8.1 Purity, formulation and chromatography	***3***	Pure substances WS 2.2, 4.1 Formulations WS 1.4, 2.2 Chromatography WS 2.2, 3.1, 3.2, 3.3, MS 1a, 1c, 1d, 2a
Chemistry 5.8 Chemical analysis 4.8.2 Identification of common gases	***2***	Test for hydrogen Test for oxygen Test for carbon dioxide Test for chlorine
Chemistry 5.8 Chemical analysis 5.8.3 Identification of ions by chemical and spectroscopic means	***6***	Flame tests WS 2.2 Metal hydroxides WS 2.2 Carbonates Halides Sulfates Instrumental methods

		Flame emission spectroscopy WS 3.6, MS 4a
Chemistry 5.9 Chemistry of the atmosphere 5.9.1 The composition and evolution of the Earth's atmosphere	***3***	The proportions of gases in the atmosphere MS 1c Earth's early atmosphere WS 1.1, 1.2, 1.3, 3.5, 3.6, 4.1 How oxygen increased WS 1.2 How carbon dioxide decreased WS 1.2, 4.1
Chemistry 5.9 Chemistry of the atmosphere 5.9.2 Carbon dioxide and methane as greenhouse gases	***4***	Greenhouse gases WS 1.2 Human activities contributing to greenhouse gases WS 1.5 Global climate change Carbon footprint & its reduction WS 1.3
Chemistry 5.9 Chemistry of the atmosphere 5.9.3 Common atmospheric pollutants and their sources	***2***	Atmospheric pollutants from fuels WS 1.2 Properties and effects of atmospheric pollutants WS 1.4
Chemistry 5.10 Using resources 5.10.1 Using the Earth's resources and obtaining potable water	***4***	Using Earth's resources and sustainable development WS 3.2, MS 2c, 2h, 4a Potable water Wastewater treatment Alternative methods of extracting metals
Chemistry 5.10 Using resources 5.10.2 Life cycle assessment and recycling	***2***	Life cycle assessment WS 1.3, 4.5, MS 1a, 1c, 1d, 2a, 4a Ways of reducing the use of resources
Chemistry 5.10 Using resources 5.10.3 Using materials	***3***	Corrosion & its prevention WS 2.2, 7, 3.5 Alloys as useful materials MS 1a, 1c Ceramics, polymers & composites WS 1.4, 3.5, 3.8
Chemistry 5.10 Using resources 5.10.4 The Haber process and the use of NPK fertilisers	***2***	The Haber Process MS 1a, 1c, WS 3.5, 3.8 Production & use of NPK fertilisers
Physics 6.5 Forces 6.5.1 Forces and their interactions	***5***	Scalar and vector Contact and non-contact forces Gravity MS 3a, 3b, 3c Resultant forces WS 1.2, MS 4a, 5a, 5b
Physics 6.5 Forces 6.5.2 Work done and energy transfer	***2***	Work done and energy transfer MS 1c, 3b, 3c, WS 4.5
Physics 6.5 Forces 6.5.3 Forces and elasticity	***2***	Forces and elasticity MS 3b, 3c, 4a, WS 3.5
Physics 6.5 Forces 6.5.4 Moments, levers and gears	***4***	Moments, levers and gears MS 3c Pressure in a fluid 1 MS 1c, 3b, 3c, WS 4.3, 4.4, 4.5, 4.6 Pressure in a fluid 2 (HT only)
Physics 6.5 Forces 6.5.5 Pressure and pressure differences in fluids	***1***	Atmospheric pressure WS 1.2
Physics 6.5 Forces 6.5.6 Forces and motion	***14***	Describing motion along a line MS 1, 3c Distance and displacement Speed MS 1a, 1c, 2f, 3b, 3c Velocity The distance-time relationship MS 4a, 4b, 4c, 4d, 4f

		Acceleration MS 1d, 3b, 3c, 4a, 4b, 4c, 4d, 4f WS 3.3, 3.5 Newton's First Law Newton's Second Law MS 1d, 3a, 3b, 3c, WS 4.2 Newton's Third Law WS 1.2 Forces and braking Stopping distances WS 3.3 Reaction time WS 1.5, 2.2, 3.5, 3.7, MS 1a, 1c Factors affecting braking distance MS 1c, 1d, 2c, 2d, 2f, 2h, 3b, 3c WS 1.5
Physics 6.5 Forces 6.5.7 Momentum (HT only)	***3***	Momentum is a property of moving objects WS 1.2, MS 3b, 3c Conservation of momentum Changes in momentum MS 3b, 3c, 3d WS 1.2, 1.4
Physics 6.6 Waves 6.6.1 Waves in air, fluids and solids	***6***	Transverse and longitudinal waves WS 1.2, 2.2 Properties of waves MS 1c, 3b, 3c, WS 2.3, 2.4, 2.6, 2.7, 3.1, 3.5 Reflection of waves MS 5a, 5c, WS 1.2 Sound waves (HT only) Waves for detection and exploration (HT only) WS 1.1, 1.4
Physics 6.6 Waves 6.6.2 Electromagnetic waves	***8***	Types of electromagnetic waves Properties of electromagnetic waves 1 WS 1.2 Properties of electromagnetic waves 2 WS 1.5 Uses and applications of electromagnetic waves WS 1.4 Lenses MS 3b, 3c, 5a, 5c, WS 1.2 Visible light
Physics 6.6 Waves 6.6.3 Black body radiation	***2***	Emission and absorption of infrared radiation Perfect black bodies and radiation WS 1.2
Physics 6.7 Magnetism and electromagnetism 6.7.1 Permanent and induced magnetism, magnetic forces and fields	***2***	Poles of a magnet Magnetic fields WS 2.2
Physics 6.7 Magnetism and electromagnetism 6.7.2 The motor effect	***5***	Electromagnetism WS 2.2, 1.4 Fleming's left-hand rule (HT only) MS 3b, 3c Electric motors (HT only) Loudspeakers (HT only)
Physics 6.7 Magnetism and electromagnetism 6.7.3 Induced potential, transformers and the National Grid	***4***	Induced potential (HT only) Uses of the generator effect (HT only) WS 1.4 Microphones (HT only) Transformers (HT only) MS 1c, 3b, 3c
Physics 6.8 Space physics 6.8.1 Solar system; stability of orbital motions; satellites	***5***	Our solar system The life cycle of a star Orbital motion, natural and artificial satellites
Physics 6.8 Space physics 6.8.2 Red-shift	***2***	Red-shift WS 1.1, 1.2, 1.3

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Qualities
During KS4, pupils will have opportunities to develop the following BUILD qualities:

BUILD Quality	***How the Year 10 Science curriculum contributes to developing this quality:***
Respect	
Kindness	
Tolerance	
Resilience	
Creativity	
Positivity	
Integrity	
Aspiration	
Empathy	

Skills
During KS4, pupils will have opportunities to develop the following wider skills:

Skill Area	***How the Year 7 Science curriculum contributes to developing this skill area:***
Literacy & Numeracy	
Communication	
Problem Solving	
Leadership	
Collaboration	
Metacognition	
Physical, Practical and Technical	
Digital Literacy	

Enrichment
During KS4, the following events, visits, and trips will enrich the Science curriculum:

Event, Visit or Trip	***Linked unit(s) of study***	***How the event, visit or trip enriches the curriculum:***
GCSE Science live	***Dependent on speakers – topics across all three subject areas***	***Insight into careers & research fields in the sciences, along with study options. Additional session with examiner explores exam questions & answer techniques.***