Curriculum Sequencing Grid: Science

Year 7	**Term 1**	**Term 2**	**Term 3**
Unit (Tablet in 39-week plan)	Matter, Organisms, Forces, Ecosystems	Energy, Reactions, Earth	Electromagnets, Genes and Waves
Key Retainable Knowledge (Required for Y11/13) • What… How…. Why….	• Cells • Movement • Plant reproduction • Interdependence • Particle model • Separating mixtures • Speed • Gravity	• Acids and alkalis • Metals and non-metals • Universe • Earth structure • Energy costs • Energy transfers	• Current and voltage • Resistance • Human reproduction • Variation • Sound • Light
Key Technical Vocabulary (To be modelled and deliberately practiced in context.)	Bio: Membrane, Cytoplasm, Nucleus, Mitochondria, Ribosomes, Diffusion, Concentration, Stamen, Carpel, Stigma, Filament, Ovary Chem: Solid, Liquid, Gas, Evaporate, Condensate, Melt, Freeze, Boil, Distillation, Filtration, Chromatography Phys: Newton, Weight	Chem: Acid, Alkali, Neutralisation, pH scale, Malleable, Ductile, Brittle, Conductor Igneous, Metamorphic, Sedimentary, Sediment, Extrusive, Intrusive, Star, Planet, Satellite, Seasons, Tilt Phys: Power, Time, Watts, Joules, Chemical, Electrical, Kinetic	Bio: Penis, Vagina, Ovary, Fallopian tube, Natural selection, Sperm, Ovum, Competition Phys: Current, Voltage, Resistance, Electrons, Diameter, Temperature, Energy, Wave, Longitudinal, Transverse, Weight, Mass, Frequency

Curriculum Sequencing Grid: Science

Opportunities for Reading	General reading: BBC Bitesize, National Geographic, Eco Kids, How it works	General reading: BBC Bitesize, National Geographic, Eco Kids, How it works	General reading: BBC Bitesize, National Geographic, Eco Kids, How it works
Developing Cultural Capital (exposure to very best- essential knowledge and skills of educated citizens – appreciation of human creativity and achievement.)	Job links = Botanist, Marine Biologist, Conservationist Enrichment: STEM club	Appreciation of human creativity and achievement = James Prescott Joule Enrichment: STEM club/Science week	Job links = Medical Doctor, Physiotherapist, Nurse, Midwife Enrichment: Magna
Cross Curricular Links (Authentic Connections)	Rearranging equations – Maths Muscles and joints – P.E. Extended answers - English	Rearranging equations – Maths Extended answers – English Earth structure – Geography	Speed = distance/time – Maths Extended answers – English Reproduction – Life skills
Key Assessment	Topic Tests Synoptic Tests	Topic Tests Mid-Year Synoptic Test	Topic Tests

Curriculum Sequencing Grid: Science

How Science Work Skills in Science	• These skills will continuously throughout the year, some, or all of which will be covered within each topic
	  ○ Variables
	  ○ Equipment
	  ○ Risk assessments
	  ○ Writing a method
	  ○ Presenting data (bar charts and line graphs)
	  ○ Interpreting data
	  ○ Types of error (measuring, systematic, random)
	  ○ Equations, calculations, and units
	  ○ Evaluating
	  ○ Models		

Year 8	**Term 1**	**Term 2**	**Term 3**
Unit (Tablet in 39-week plan)	Organisms, Energy, Matter, Reactions,	Forces, Ecosystems	Genes, Waves, Earth, Electromagnets
Key Retainable Knowledge (Required for Y11/13) • What… How…. Why….	• Breathing • Digestion • Chemical energy • Types of reactions • Elements • Periodic table • Heating and cooling • Work done	• Respiration • Photosynthesis • Contact forces • Pressure	• Evolution • Inheritance • Climate • Resources • Wave effects • Wave properties • Magnets • Electromagnets
Key Technical Vocabulary (To be modelled and deliberately practiced in context.)	Bio: Diaphragm, Ribs, Volume, Villi, Small intestine, large intestine	Bio:	Bio:

Curriculum Sequencing Grid: Science

	Chem: Exothermic, Endothermic, Bond, Reaction Profile, Catalyst, Combustion, Neutralisation, Element, Compound, Electrolysis, Group, Period Phys: Conduction, Convection, Radiation, Energy, Force	Glucose, Starch, Sunlight, Chloroplasts, Chlorophyll, Aerobic, Anaerobic, Fermentation, Lactic Acid Phys: Area, Surface Area, Force, Pascals, Friction, Push	Species, Competition, Natural Selection, Interspecific, Intraspecific, genes, Inheritance, offspring Chem: Greenhouse gases, Carbon Dioxide, global warming, climate change Phys: Frequency, Wavelength, Longitudinal, Transverse, Reflection, Refraction, Magnetism, Solenoid, Poles, Voltage, Coil
Opportunities for Reading	General reading: BBC Bitesize, National Geographic, Eco Kids, How it works	General reading: BBC Bitesize, National Geographic, Eco Kids, How it works	General reading: BBC Bitesize, National Geographic, Eco Kids, How it works
Developing Cultural Capital (exposure to very best- essential knowledge and skills of educated citizens – appreciation of human creativity and achievement.)	Job links = Medical Doctor, Electrician, electrical engineer Enrichment: STEM club	Job links = Research associate, Teacher Appreciation of human creativity and achievement = Charles Darwin, Lamarack Enrichment: STEM club/Science week	Job links = Data Scientist, Botanist, Arable Farming Appreciation of human creativity and achievement = Louis Pascal Enrichment: STEM club/Magna
Cross Curricular Links (Authentic Connections)	Balanced diets – P.E. Rearranging equations – maths	Climate change – Geography Rearranging equations – maths	Aerobic respiration – P.E. Rearranging equations – maths

Curriculum Sequencing Grid: Science

	Extended answers - English	Extended answers - English	Extended answers - English
Key Assessment	Topic Tests Synoptic Tests	Topic Tests Mid-Year Synoptic Test	Topic Tests
How Science Work Skills in Science	• These skills will continuously throughout the year, some, or all of which will be covered within each topic o Variables o Equipment o Risk assessments o Writing a method o Presenting data (bar charts and line graphs) o Interpreting data o Types of error (measuring, systematic, random) o Equations, calculations, and units o Evaluating o Models		
Year 9	**Term 1**	**Term 2**	**Term 3**
Unit (Tablet in 39-week plan)	• P6.1 – Energy • C5.1 – Atomic Structure • B4.1 – Cells	• P6.2 Electricity • B4.2 Organisation	• P6.4 Atomic structure and radioactivity • C5.4 Chemical changes • C5.5 Energy changes

Curriculum Sequencing Grid: Science

Key Retainable Knowledge (Required for Y11/13) • What… How…. Why….	• Cellular structure and organelles • Mitosis • Movement of substances • Adaptations of cells • Transfers of energy • Remembering and application of formulae/units • Specific heat capacity • Renewable/non-renewable resources • Atomic structure • Periodic table • Separating techniques • Isotopes • Evaluating skills • Required practical skills	• Cells, Tissues and Organs • Respiration and photosynthesis • Enzymes • Use of symbols • Circuit diagrams • Generating electricity, renewable/non-renewable resources • Required practical skills	• Atomic structure • Isotopes • Ionising radiation • Chemical equations • Exothermic • Endothermic • Acids and bases • Required practical skills
Key Technical Vocabulary (To be modelled and deliberately practiced in context.)	• Organelles, cell, microscope, magnification, adaptation, diffusion, osmosis • Proton, neutron, electron, Relative atomic mass, and atomic number • Energy, transfer, dissipates, Joules, specific heat capacity, work done, efficiency, renewable and non-renewable	• Symbol, component, current, resistance, potential difference, renewable and non-renewable • Cells, tissues, organs, organ system, enzymes	• Proton, neutron, electron, Relative atomic mass and atomic number, isotopes, alpha, beta, gamma • Word and symbol equations • Reactions and products • Writing and reading formulae • Everyday reactions

Curriculum Sequencing Grid: Science

Opportunities for Reading	• Analysing information about renewable and non-renewable energy sources • Research Iceland as a country for nuclear energy • Research regions that only use renewable energy • History of atomic model and periodic table	• Newly discovered enzymes in nature • Current research on organ transplants	• Chernobyl • Use of exothermic and endothermic reactions in treating sport injuries
Developing Cultural Capital (exposure to very best- essential knowledge and skills of educated citizens – appreciation of human creativity and achievement.)	Appreciation of human creativity and achievement = Alpha Scattering Experiment	Job Links = pathologist, histologist, electrical engineering, telecommunications	• What went wrong at Chernobyl? What can be learnt from this?
Cross Curricular Links (Authentic Connections)	• Maths – formula: application of formula and units, rearranging formula Maths – line graphs: drawing and interpreting	• Maths – formula: application of formula and units, rearranging formula Maths – line graphs: drawing and interpreting	• Maths – formula: application of formula and units, rearranging formula Maths – line graphs: drawing and interpreting
Key Assessment	• End of Unit Tests	• End of Unit Tests	• End of Unit Tests • Synoptic Exam
How Science Work Skills in Science	• These skills will continuously throughout the year, some, or all of which will be covered within each topic o Variables		

Curriculum Sequencing Grid: Science

	○ Equipment ○ Risk assessments ○ Writing a method ○ Presenting data (bar charts and line graphs) ○ Interpreting data ○ Types of error (measuring, systematic, random) ○ Equations, calculations, and units ○ Evaluating ○ Models