



TERM 1	TERM 2	TERM 3	TERM 4
<p>Genetics</p> <ul style="list-style-type: none"> DNA (structure and discovery) DNA replication DNA, chromosomes and genes Mitosis Meiosis Mendel's contribution Inheritance Genetics Investigation Pedigrees Mutations Gene technologies Ethics in genetics <p>(5 weeks)</p> <p>Global systems</p> <ul style="list-style-type: none"> The lithosphere The atmosphere The hydrosphere The biosphere Natural cycles Weather and climate systems Ocean currents and climate control Climate change Other impacts on global systems <p>(5 weeks)</p> <p>(Term 1: 10 weeks)</p>	<p>Chemistry</p> <ul style="list-style-type: none"> Elements The periodic table⁴ Properties of atomic structure Electron configuration Ions Electricity Elements in our oceans Salinity <p>(5 weeks)</p> <p>EXAM & Revision: (2 weeks)</p> <p>Science Inquiry skills</p> <ul style="list-style-type: none"> Chemistry Investigation <p>(2 weeks)</p> <p>Work experience: (1 week)</p> <p>(Term 2: 10 weeks)</p>	<p>Using chemistry</p> <ul style="list-style-type: none"> Types of reactions Polymers Writing chemical equations Nanotechnology Rates of reactions Catalysts and enzymes Risks of using chemicals Chemicals and pollutants Green chemistry and sustainability <p>(5 weeks)</p> <p>Motion and Energy</p> <ul style="list-style-type: none"> Distance and displacement Speed and velocity Acceleration Motion Investigation Newton's first law (Inertia) Newton's second law ($F=ma$) Newton's third law (action/reaction pairs) Momentum Work Energy Energy ups and downs Making cars safe <p>(5 weeks)</p> <p>(Term 3: 10 weeks)</p>	<p>Evolution</p> <ul style="list-style-type: none"> Biodiversity History of evolution theory Natural selection Variation Mutations Speciation Evidence for evolution Fossils Evolutionary relationships Human evolution <p>(6 weeks)</p> <p>Exams and Revision (2 weeks)</p> <p>Head-start program: The Origin of the Universe</p> <ul style="list-style-type: none"> Scientific notation The origin of the universe Comparing stars/H-R diagram The life and death of stars Space technologies Is there anyone out there? <p>(2 weeks)</p> <p>End of year program (1 week)</p> <p>(Term 4: 11 weeks)</p>

Standards and progression point examples

Level 10 Achievement Standard

By the end of Level 10, students explain the concept of energy conservation and model energy transfer and transformation within systems. They analyse how biological systems function and respond to external changes with reference to interdependencies, energy transfers and flows of matter. They evaluate the evidence for scientific theories that explain the origin of the universe and the diversity of life on Earth. They explain the role of DNA and genes in cell division and genetic inheritance. They apply geological timescales to elaborate their explanations of both natural selection and evolution. They explain how similarities in the chemical behaviour of elements and their compounds and their atomic structures are represented in the way the periodic table has been constructed. They compare the properties of a range of elements representative of the major groups and periods in the periodic table. They use atomic symbols and balanced chemical equations to summarise chemical reactions, including neutralisation and combustion. They explain natural radioactivity in terms of atoms and energy change. They explain how different factors influence the rate of reactions. They explain global features and events in terms of geological processes and timescales, and describe and analyse interactions and cycles within and between Earth's spheres. They give both qualitative and quantitative explanations of the relationships between distance, speed, acceleration, mass and force to predict and explain motion.

Students analyse how the models and theories they use have developed over time and discuss the factors that prompted their review. They predict how future applications of science and technology may affect people's lives.

By the end of Level 10, students develop questions and hypotheses that can be investigated using a range of inquiry skills. They independently design and improve appropriate methods of investigation including the control and accurate measurement of variables and systematic collection of data. They explain how they have considered reliability, safety, fairness and ethics in their methods and identify where digital technologies can be used to enhance the quality of data. They analyse trends in data, explain relationships between variables and identify sources of uncertainty. When selecting evidence and developing and justifying conclusions, they account for inconsistencies in results and identify alternative explanations for findings. Students evaluate the validity and reliability of claims made in secondary sources with reference to currently held scientific views, the quality of the methodology and the evidence cited. They construct evidence-based arguments and use appropriate scientific language, representations and text types when communicating their findings and ideas for specific purposes.



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<p>Genetics & Evolution (Group 1)</p> <ul style="list-style-type: none"> DNA Simple Inheritance Incomplete inheritance (not mitosis, meiosis, pedigrees) Natural selection biodiversity Evidence for evolution (not patterns of evolution, impacts on evolution) <p><i>(5 weeks - 15 lessons)</i></p> <p>Electronics and electromagnetism</p> <ul style="list-style-type: none"> Circuit diagrams resistors other electronic components (not magnetism) <p><i>(3 weeks - 7 lessons)</i></p> <p>Motion</p> <ul style="list-style-type: none"> Using formulas <p><i>(1 lesson)</i></p> <p>(Term 1: 8 weeks + 2 days)</p>	<p>Materials and technology</p> <ul style="list-style-type: none"> Metals and Non-Metals Sour acids and Bitter bases What a waste <p><i>(4 weeks - 11 lessons)</i></p> <p>The mind and human behaviour</p> <ul style="list-style-type: none"> The brain Eyewitness testimony Brain disorders (not forensics, sports psychology) <p><i>(2 weeks - 6 lessons)</i></p> <p>EXAM & Revision</p> <p><i>(2 weeks)</i></p> <p>Careers</p> <p><i>(2 weeks)</i></p> <p>Work experience</p> <p><i>(1 week)</i></p> <p>(Term 2: 11 weeks)</p>	<p>Genetics & Evolution (Group 1)</p> <ul style="list-style-type: none"> DNA Simple Inheritance Incomplete inheritance (not mitosis, meiosis, pedigrees) Natural selection biodiversity Evidence for evolution (not patterns of evolution, impacts on evolution) <p><i>(5 weeks - 15 lessons)</i></p> <p>Electronics and electromagnetism</p> <ul style="list-style-type: none"> Circuit diagrams resistors other electronic components (not magnetism) <p><i>(3 weeks - 7 lessons)</i></p> <p>Origin of the Universe (Group 2)</p> <ul style="list-style-type: none"> Theories of the Origin of the Universe Birth and death of stars H-R diagram <p><i>(2 weeks)</i></p> <p>Motion</p> <ul style="list-style-type: none"> Using formulas (1 lesson) <p>(Term 3: 10 weeks)</p>	<p>Materials and technology</p> <ul style="list-style-type: none"> Metals and Non-Metals Sour acids and Bitter bases What a waste <p><i>(4 weeks - 11 lessons)</i></p> <p>The mind and human behaviour</p> <ul style="list-style-type: none"> The brain Eyewitness testimony Brain disorders (not forensics, sports psychology) <p><i>(2 weeks - 6 lessons)</i></p> <p>Exams and Revision</p> <p><i>(2 weeks)</i></p> <p>Headstart program (Group 1)</p> <p>The Origin of the Universe</p> <ul style="list-style-type: none"> Theories of the Origin of the Universe Birth and death of stars H-R diagram Holiday homework - stars poster <p><i>(2 weeks)</i></p> <p>End of year program</p> <p><i>(1 week)</i></p> <p>(Term 4: 11 weeks)</p>