Year 4 plan — Australian Curriculum: Science

Implementation year: School name:

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| Identify curriculum | Year level description(highlighted aspects indicate differences from the previous year level) | The *Science Inquiry Skills* and *Science as a Human Endeavour* strands are described across a two-year band. In their planning, schools and teachers refer to the expectations outlined in the Achievement Standard and also to the content of the *Science Understanding* strand for the relevant year level to ensure that these two strands are addressed over the two-year period. The three strands of the curriculum are interrelated and their content is taught in an integrated way. The order and detail in which the content descriptions are organised into teaching/learning programs are decisions to be made by the teacher.Over Years 3 to 6, students develop their understanding of a range of systems operating at different time and geographic scales. In Year 4, students broaden their understanding of classification and form and function through an exploration of the properties of natural and processed materials. They learn that forces include non-contact forces and begin to appreciate that some interactions result from phenomena that can’t be seen with the naked eye. They begin to appreciate that current systems, such as Earth’s surface, have characteristics that have resulted from past changes and that living things form part of systems. They understand that some systems change in predictable ways, such as through cycles. They apply their knowledge to make predictions based on interactions within systems, including those involving the actions of humans. |
| Achievement standard | By the end of Year 4, students apply the [observable](http://www.australiancurriculum.edu.au/Glossary?a=S&t=observable) [properties](http://www.australiancurriculum.edu.au/Glossary?a=S&t=properties) of [materials](http://www.australiancurriculum.edu.au/Glossary?a=S&t=materials) to explain how objects and [materials](http://www.australiancurriculum.edu.au/Glossary?a=S&t=materials) can be used. They use contact and non-contact [forces](http://www.australiancurriculum.edu.au/Glossary?a=S&t=forces) to describe interactions between objects. They discuss how natural and human processes cause changes to the Earth’s surface. They describe [relationships](http://www.australiancurriculum.edu.au/Glossary?a=S&t=relationships) that assist the survival of living things and sequence key stages in the life cycle of a plant or animal. They identify when science is used to ask questions and make predictions. They describe situations where science understanding can influence their own and others’ actions.Students follow instructions to identify investigable questions about familiar contexts and predict likely outcomes from [investigations](http://www.australiancurriculum.edu.au/Glossary?a=S&t=investigations). They discuss ways to conduct [investigations](http://www.australiancurriculum.edu.au/Glossary?a=S&t=investigations) and safely use equipment to make and record observations. They use provided [tables](http://www.australiancurriculum.edu.au/Glossary?a=S&t=tables) and simple column [graphs](http://www.australiancurriculum.edu.au/Glossary?a=S&t=graphs) to organise their [data](http://www.australiancurriculum.edu.au/Glossary?a=S&t=data) and identify [patterns](http://www.australiancurriculum.edu.au/Glossary?a=S&t=patterns) in [data](http://www.australiancurriculum.edu.au/Glossary?a=S&t=data). Students suggest explanations for observations and compare their findings with their predictions. They suggest reasons why their methods were fair or not. They complete simple [reports](http://www.australiancurriculum.edu.au/Glossary?a=S&t=reports) to communicate their methods and findings. |
| Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), *Australian Curriculum v3.0: Science for Foundation–10*, <www.australiancurriculum.edu.au/Science/Curriculum/F-10>. |
| Teaching and learning | Term overview | Term 1 | Term 2 | Term 3 | Term 4 |
| The balance of natureDuring this term students use a local habitat to explore the contribution of science to discussions about how human activity has changed the local environment. Students will:* use tables and graphs to record observations and identify patterns of life cycles
* describe and compare stages of the life cycles of different living things, including plants and animals
* recognise environmental factors that can affect life cycles
* investigate the interdependence of animals and plants
* investigate roles of living things (including humans) within a habitat
* describe predator–prey relationships
* predict the effects when living things in feeding relationships die out or are removed
* predict the effects of human activity on feeding relationships
* communicate ideas and findings in a variety of ways.
 | Exemplar unit: Here today, gone tomorrowDuring this term students explore the local catchment to investigate the effects of human activity, natural disasters and extreme weather that cause erosion of the Earth’s surface.Students will:* ask questions to inform an investigation about a local area that has changed as a result of natural processes
* collect and record evidence of change to local landforms
* investigate erosion by understanding the characteristics of soil
* consider how to minimise the effects of events such as human activity, natural disasters and extreme weather on the local landscape
* identify questions to be investigated
* make predictions and compare results with predictions
* plan and conduct investigations that are fair tests
* collect data and use tables and graphs to represent data and to identify trends and patterns
* communicate ideas and findings in a variety of ways.
 | Material useDuring this term students investigate how the properties of materials influence their use for work, recreation and play. Students will:* describe a range of properties of common materials and their uses
* identify questions to be investigated about why materials are chosen for a particular use
* plan and conduct safe and fair tests to investigate the properties of a range of materials and the best choice of material for a specific purpose
* plan and conduct safe and fair investigations that compare a particular property for a range of materials
* make predictions and compare results with predictions
* collect data and use tables and graphs to represent data and to identify trends and patterns
* select materials for uses based on their properties
* consider how the properties of materials affect waste management or may lead to pollution
* communicate ideas and findings in a variety of ways.
 | Safety firstDuring this term students appreciate the effect of their actions as they explore the ways science has contributed to safety rules and devices as they answer questions such as: Why do we wear seatbelts? Why do we wear bicycle helmets? Students will:* revise from Term 3 that materials are selected for particular uses based on their properties
* ask questions about safety devices to inform investigations
* plan and conduct safe and fair tests to investigate the effect of forces on the behaviour of objects
* plan and conduct safe and fair tests that investigate the effect of friction between different surfaces and to compare the effects of forces on different materials
* make predictions and compare results with predictions
* collect data and use tables and graphs to represent data and to identify trends and patterns
* communicate ideas and findings in a variety of ways.
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| Teaching and learning | Aboriginal and Torres Strait Islander perspectives | Science provides opportunities for students to strengthen their appreciation and understanding of Aboriginal peoples and Torres Strait Islander peoples and their living cultures. Specific content and skills within relevant sections of the curriculum can be drawn upon to encourage engagement with:* Aboriginal and Torres Strait Islander frameworks of knowing and ways of learning
* Indigenous contexts in which Aboriginal and Torres Strait Islander peoples live
* Aboriginal peoples’ and Torres Strait Islander peoples’ contributions to Australian society and cultures.

Science provides opportunities to explore aspects of Australian Indigenous knowing with connection to, and guidance from, the communities who own them. Using a respectful inquiry approach, students have the opportunity to explore non-Indigenous science interpretations of Aboriginal and Torres Strait Islander lifestyles including knowledge of natural phenomena; native flora and fauna; and land, water and waste management. Using an inquiry approach enables students to learn science in contexts that are valued by Aboriginal and Torres Strait Islander students, their peers and communities, acknowledging their values and approaches to learning. |
| General capabilities and cross‑curriculum priorities | Opportunities to engage with:Description: Description: gc_literacy Description: Description: gc_numeracy Description: Description: Description: gc_critical Description: Description: gc_ethicalcc_sust | Opportunities to engage with:Description: Description: gc_literacy Description: Description: gc_numeracyDescription: Description: gc_ictDescription: Description: gc_critical Description: Description: gc_ethicalcc_sust cc_asia | Opportunities to engage with:Description: Description: gc_literacy Description: Description: gc_numeracyDescription: Description: gc_ictDescription: Description: gc_critical Description: Description: gc_ethicalcc_sust | Opportunities to engage with:Description: Description: gc_literacy Description: Description: gc_numeracy Description: Description: gc_ict Description: Description: gc_critical Description: Description: gc_ethical cc_sust |
| Key to general capabilities and cross-curriculum priorities | Description: Description: gc_literacy Literacy  Description: Description: gc_numeracy Numeracy  Description: Description: gc_ict ICT capability  Description: Description: gc_critical Critical and creative thinking  Description: Description: gc_ethical Ethical behaviour  Description: Description: gc_personal_social Personal and social capability  Description: Description: gc_intercultural Intercultural understanding Aboriginal and Torres Strait Islander histories and cultures  Description: cc_asia Asia and Australia’s engagement with Asia  Description: cc_sust Sustainability |
| Develop assessment | AssessmentFor advice and guidelines, on assessment, see: [www.qsa.qld.edu.au](http://www.qsa.qld.edu.au) | A folio is a targeted selection of evidence of student learning and includes a range of responses to a variety of assessment techniques. A folio is used to make an overall on-balance judgment about student achievement and progress at appropriate points and informs the reporting process.  |
| Term 1 | Term 2 | Term 3 | Term 4 |
| Week | Assessment instrument | Week | Assessment instrument | Week | Assessment instrument | Week | Assessment instrument |
| 1 | Supervised assessment: Short response (Written)Identify current knowledge with a diagnostic tool at the beginning of the unit and use formatively to consolidate and build upon prior knowledge. | 2–10 | Collection of work (Written) * science journal entries
* predictions
* observations
* labelled diagrams
* written explanations
* research
* science reports.
 | 2–10 | Collection of work (Written) * science journal entries
* investigation methods
* predictions
* graphs and tables
* labelled diagrams
* written explanations
* drawing conclusions
* improvements to methods
* science reports.
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* research.
 | 7–10 | Experimental investigation: Model design and demonstration (Multimodal)Design and construct a model to show the effects of human activity on the Earth’s surface.Demonstrate the model to an audience and make recommendations for future prevention of the effects.The assessment package *Changes to the coast* in the QSA Assessment Bank could be used as assessment in this unit. | 6–10 | Research: Report (Written)Write a report that makes a recommendation in response to a design brief that critiques the selection of materials for a specific purpose. | 6–8 | Experimental investigation:Scientific report (Written)Analyse the data collected during an investigation to evaluate safety equipment and safety rules.  |
| 7 | Supervised assessment: Short responses (Written)The life cycles and interactions between living things in an environment are represented in a concept cartoon.The best explanation for the scenario is chosen and this choice is justified. | **QCATs:** Identify the curriculum targeted by the QCAT and schedule its implementation appropriate to the sequence of learning. |
| Make judgments and use feedback | Moderation | Teachers develop tasks and plan units.Teachers co-mark tasks to ensure consistency of judgments. | Teachers develop tasks and plan units.Teachers select representative folios and meet to ensure consistency of judgments before marking tasks. | Teachers develop tasks and plan units.Teachers select representative folios and meet to ensure consistency of judgments before marking tasks.Teachers choose a selection of the QCATs to calibrate. They moderate to ensure consistency of judgments. | Teachers develop tasks and plan units.Teachers co-mark tasks to ensure consistency of judgments.Teachers participate in school and cluster moderation of the QCATs. |

Year 4 Science: review for balance and coverage of content descriptions

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| Science Understanding | 1 | 2 | 3 | 4 |
| Biological sciences |
| Living things have life cycles [(ACSSU072)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSSU072) | ✓ |  |  |  |
| Living things, including plants and animals, depend on each other and the environment to survive [(ACSSU073)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSSU073) | ✓ |  |  |  |
| Chemical sciences |
| Natural and processed materials have a range of physical properties; These properties can influence their use [(ACSSU074)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSSU074) |  |  | ✓ | ✓ |
| Earth and space sciences |
| Earth’s surface changes over time as a result of natural processes and human activity [(ACSSU075)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSSU075) |  | ✓ |  |  |
| Physical sciences |
| Forces can be exerted by one object on another through direct contact or from a distance [(ACSSU076)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSSU076) |  |  |  | ✓ |

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| Science as a Human Endeavour | 1 | 2 | 3 | 4 |
| Nature and development of science |
| Science involves making predictions and describing patterns and relationships [(ACSHE061)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSHE061) | ✓ | ✓ | ✓ | ✓ |
| Use and influence of science |
| Science knowledge helps people to understand the effect of their actions [(ACSHE062)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSHE062) | ✓ | ✓ |  | ✓ |

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| Science Inquiry Skills | 1 | 2 | 3 | 4 |
| Questioning and predicting |
| With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge [(ACSIS064)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS064) | ✓ | ✓ | ✓ | ✓ |
| Planning and conducting |
| Suggest ways to plan and conduct investigations to find answers to questions [(ACSIS065)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS065) |  | ✓ | ✓ | ✓ |
| Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate [(ACSIS066)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS066) |  | ✓ | ✓ | ✓ |
| Processing and analysing data and information |
| Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends [(ACSIS068)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS068) | ✓ | ✓ | ✓ | ✓ |
| Compare results with predictions, suggesting possible reasons for findings [(ACSIS216)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS216) | ✓ | ✓ | ✓ | ✓ |
| Evaluating |
| Reflect on the investigation; including whether a test was fair or not [(ACSIS069)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS069) |  | ✓ | ✓ | ✓ |
| Communicating |
| Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports [(ACSIS071)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS071) | ✓ | ✓ | ✓ | ✓ |

Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), *Australian Curriculum v3.0: Science for Foundation–10*, <www.australiancurriculum.edu.au/Science/Curriculum/F-10>.