Year 5 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 5, students are introduced to cause and effect relationships that relate to form and function through an exploration of adaptations of living things. They explore observable phenomena associated with light and begin to appreciate that phenomena have sets of characteristic behaviours. They broaden their classification of matter to include gases and begin to see how matter structures the world around them. Students consider Earth as a component within a solar system and use models for investigating systems at astronomical scales. Students begin to identify stable and dynamic aspects of systems, and learn how to look for patterns and relationships between components of systems. They develop explanations for the patterns they observe. |
| Achievement standard | By the end of Year 5, students [classify](http://www.australiancurriculum.edu.au/Glossary?a=S&t=classify) substances according to their [observable](http://www.australiancurriculum.edu.au/Glossary?a=S&t=observable) [properties](http://www.australiancurriculum.edu.au/Glossary?a=S&t=properties) and behaviours. They explain everyday phenomena associated with the transfer of light. They describe the key features of our solar [system](http://www.australiancurriculum.edu.au/Glossary?a=S&t=system). They [analyse](http://www.australiancurriculum.edu.au/Glossary?a=S&t=analyse) how the form of living things enables them to function in their environments. Students discuss how scientific developments have affected people’s lives and how science knowledge develops from many people’s contributions. Students follow instructions to pose questions for [investigation](http://www.australiancurriculum.edu.au/Glossary?a=S&t=investigation), predict what might happen when [variables](http://www.australiancurriculum.edu.au/Glossary?a=S&t=variables) are changed, and plan [investigation](http://www.australiancurriculum.edu.au/Glossary?a=S&t=investigation) methods. They use equipment in ways that are safe and improve the accuracy of their observations. Students construct [tables](http://www.australiancurriculum.edu.au/Glossary?a=S&t=tables) and [graphs](http://www.australiancurriculum.edu.au/Glossary?a=S&t=graphs) to organise [data](http://www.australiancurriculum.edu.au/Glossary?a=S&t=data) and identify [patterns](http://www.australiancurriculum.edu.au/Glossary?a=S&t=patterns). They use [patterns](http://www.australiancurriculum.edu.au/Glossary?a=S&t=patterns) in their [data](http://www.australiancurriculum.edu.au/Glossary?a=S&t=data) to suggest explanations and refer to [data](http://www.australiancurriculum.edu.au/Glossary?a=S&t=data) when they [report](http://www.australiancurriculum.edu.au/Glossary?a=S&t=report) findings. They describe ways to improve the fairness of their methods and communicate their ideas, methods and findings using a range of text types. |
| 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 |
| Survival in the environmentDuring this term students examine the behavioural and structural features and adaptations that allow living things to survive in their environment. They use this new knowledge to pose questions and make predictions about the relationship between these adaptations and human activity.Students will:* describe adaptations of living things to the Australian environment
* describe adaptations of living things to extreme environments other than Australia
* explain how particular adaptations assist survival
* classify adaptations as structural or behavioural
* appreciate Aboriginal and Torres Strait Islander understandings of adaptations
* research how people’s understanding of the adaptations of living things influences decisions made about food sources cultivated in different environments
* pose questions and make predictions about how global warming might affect the survival and future adaptations of living things
* communicate ideas and explanations in a variety of ways.
 | Our place in the solar systemDuring this term, through the context of astronomy, students appreciate that science involves gathering data and using evidence to explain phenomena, and that this process is advanced by new technologies.Students will:* identify the planets of the solar system
* create a timeline of the discovery of the planets and major bodies in solar system
* research how the development of optical instruments and technology influenced the discovery of the planets and major bodies in the solar system
* use online simulations to appreciate the place of Earth in the solar system
* research and record data about the size of the planets and their distance from each other and the sun
* create models that show the relative size of and distance between Earth, the other planets and the sun
* compare how long the planets take to orbit the sun (planetary year) and display this data using a variety of representations
* calculate their age on different planets using planetary year data
* appreciate why life exists on Earth and not on other planets
* communicate ideas and explanations in a variety of ways.
 | Now you see itDuring this term students investigate the reflection, absorption, transmission and refraction of light and the formation of shadows. They explore the role of light in everyday objects and devices.Students will:* make predictions and then investigate absorption, transmission and reflection by shining light on a variety of objects
* classify materials as transparent, opaque or translucent
* investigate refraction by creating rainbows
* draw simple labelled ray diagrams
* explore how the colour of an object depends on its properties and the colour of the light source
* explore the role of light in their everyday lives, for example in:
* compact disc (CD) players
* grocery store checkouts
* digital cameras
* images used in hospitals
* laser eye surgery
* develop explanations about how shadows are formed, and can change in size and shape, by carrying out safe and fair investigations
* accurately observe, measure and record data and display it using a range of representations
* communicate ideas, explanations and processes in a variety of ways.
 | Exemplar unit: Matter mattersDuring this term students broaden their classification of matter to include gases and begin to see how matter structures the world around them. They investigate the observable properties and behaviour of solids, liquids and gases, and the development of composite materials to meet the needs of modern society.Students will:* compare solids and liquids and their ability to flow or maintain shape and volume
* observe that gases have mass and take up space
* classify everyday materials and items as solid, liquid or gas
* explore the way that solids, liquids and gases change under different conditions, such as heating and cooling in everyday situations
* explore sublimation and explain why this change in state can be useful in everyday situations
* recognise that some materials are composite materials and cannot be easily classified
* pose questions, make predictions and conduct safe and fair investigations
* construct and use a range of representations and compare data with predictions
* suggest improvements to methods
* communicate ideas, explanations and processes 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 | Opportunites to engage with:Description: gc_literacy Description: gc_numeracy Description: gc_ict Description: Description: gc_critical Description: gc_ethical Description: gc_personal_social Description: gc_interculturalDescription: cc_sust | Opportunites to engage with:Description: Description: gc_literacy Description: gc_numeracy Description: gc_ict Description: Description: gc_critical Description: gc_personal_socialDescription: cc_sust | Opportunites to engage with:Description: gc_literacy Description: gc_numeracy Description: gc_ict Description: gc_critical Description: gc_ethical Description: gc_personal_social | Opportunites to engage with:Description: gc_literacy Description: gc_numeracy Description: gc_ict Description: gc_critical Description: gc_personal_social |
| 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. | 4 | Research: Annotated diagram (Written)Represent the solar system, and Earth’s place in it, in an annotated diagram drawn to scale.  | 2–9 | 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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* investigation methods
* predictions
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* labelled diagrams
* written explanations
* drawing conclusions
* improvements to methods
* science reports.
 |
| 2–9 | Collection of work (Written) * science journal entries
* predictions
* observations
* labelled diagrams
* written explanations
* research.
 | 7–10 | Research: Profile (Written)Create a profile of a planet other than Earth. Explain why people, plants and animals can’t live on the planet. | 5 | Supervised assessment: Short responses (Written)Demonstrate knowledge and understanding of the properties of light. | 6–8 | Experimental investigation: Scientific report (Written)Collaboratively design a fair investigation to determine the mass of a gas in an everyday item.The following assessment packages in the QSA Assessment Bank could be used as assessment in this unit:* *Fair test*
* *Popcorn puzzle.*
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| 7 | Multimodal: Presentation and oralCreate an animal or plant that has features that allow it to survive in an extreme environment. Justify decisions.  | 7–8 | Supervised assessment: Short responses (Written)Respond to questions that use the Robert Louis Stevenson poem *My Shadow* as stimulus. For example:* What does it mean when the poem says that sometimes my shadow is very tall and sometimes there is none at all?
* What makes your shadow get long?
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| **Develop assessment** |  |  |  |  |  |  | * What makes it very small?
* When don't you have a shadow?
* What do you need to make a shadow?
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| Make judgments and use feedback | Moderation | 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 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 co-mark tasks to ensure consistency of judgments. |

Year 5 Science: review for balance and coverage of content descriptions

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| Science Understanding | 1 | 2 | 3 | 4 |
| Biological sciences |
| Living things have structural features and adaptations that help them to survive in their environment [(ACSSU043)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSSU043) | ✓ |  |  |  |
| Chemical sciences |
| Solids, liquids and gases have different observable properties and behave in different ways [(ACSSU077)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSSU077) |  |  |  | ✓ |
| Earth and space sciences |
| The Earth is part of a system of planets orbiting around a star (the sun) [(ACSSU078)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSSU078)  |  | ✓ |  |  |
| Physical sciences |
| Light from a source forms shadows and can be absorbed, reflected and refracted [(ACSSU080)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSSU080) |  |  | ✓ |  |

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| Science as a Human Endeavour | 1 | 2 | 3 | 4 |
| Nature and development of science |
| Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena [(ACSHE081)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSHE081) |  | ✓ | ✓ |  |
| Important contributions to the advancement of science have been made by people from a range of cultures [(ACSHE082)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSHE082) | ✓ |  |  |  |
| Use and influence of science |
| Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples’ lives [(ACSHE083)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSHE083) |  | ✓ | ✓ | ✓ |
| Scientific knowledge is used to inform personal and community decisions [(ACSHE217)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSHE217) | ✓ |  |  |  |

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| --- | --- | --- | --- | --- |
| Science Inquiry Skills | 1 | 2 | 3 | 4 |
| Questioning and predicting |
| With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be [(ACSIS231)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS231) | ✓ |  | ✓ | ✓ |
| Planning and conducting |
| With guidance, plan appropriate investigation methods to answer questions or solve problems [(ACSIS086)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS086) |  |  | ✓ | ✓ |
| Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate [(ACSIS087)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS087) |  |  | ✓ | ✓ |
| Use equipment and materials safely, identifying potential risks [(ACSIS088)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS088) |  |  | ✓ | ✓ |
| Processing and analysing data and information |
| Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate [(ACSIS090)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS090) |  | ✓ | ✓ | ✓ |
| Compare data with predictions and use as evidence in developing explanations [(ACSIS218)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS218) |  |  | ✓ | ✓ |
| Evaluating |
| Suggest improvements to the methods used to investigate a question or solve a problem [(ACSIS091)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS091) |  |  | ✓ | ✓ |
| Communicating |
| Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts [(ACSIS093)](http://www.australiancurriculum.edu.au/Curriculum/ContentDescription/ACSIS093) | ✓ | ✓ | ✓ | ✓ |

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