

Alignment with the Australian Curriculum: Science

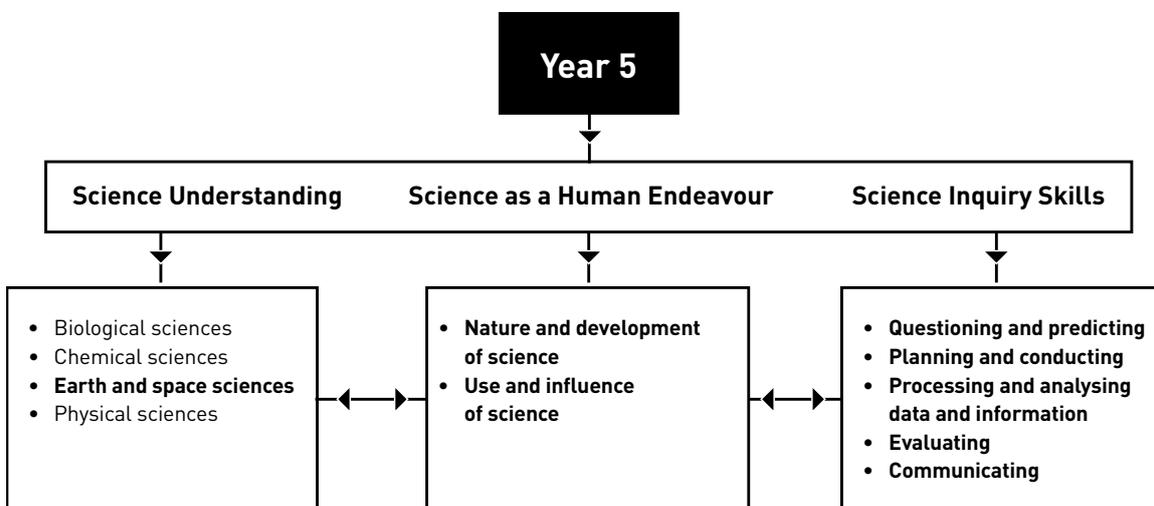
This *Earth's place in space* unit embeds all three strands of the Australian Curriculum: Science. The table below lists sub-strands and their content for Year 5. This unit is designed to be taught in conjunction with other Year 5 units to cover the full range of the Australian Curriculum: Science content for Year 5.

For ease of assessment the table below outlines the sub-strands and their aligned lessons.

Strand	Sub-strand	Code	Year 5 content descriptions	Lessons
Science Understanding	Earth and space sciences	ACSSU078	The Earth is part of a system of planets orbiting a star (the Sun)	1–7
Science as a Human Endeavour	Nature and development of science	ACSHE081	Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena	1–7
		ACSHE082	Important contributions to the advancement of science have been made by people from a range of cultures	4, 5
	Use and influence of science	ACSHE083	Scientific understandings, discoveries and inventions are used to solve problems that directly affect people's lives	1, 3, 4, 7
		ACSHE217	Scientific knowledge is used to inform personal and community decisions	2
Science Inquiry Skills	Questioning and predicting	ACSIS231	With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be	1–5
	Planning and conducting	ACSIS086	With guidance, plan appropriate investigation methods to answer questions or solve problems	3, 6
		ACSIS087	Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate	3
		ACSIS088	Use equipment and materials safely, identifying potential risks	1, 3, 4, 5
	Processing and analysing data and information	ACSIS090	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	2, 3, 6
		ACSIS218	Compare data with predictions and use as evidence in developing explanations	2, 3, 5, 6
	Evaluating	ACSIS091	Suggest improvements to the methods used to investigate a question or solve a problem	3, 6, 7
	Communicating	ACSIS093	Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts	2, 3, 7

Interrelationship of the science strands

The interrelationship between the three strands—Science Understanding, Science as a Human Endeavour and Science Inquiry Skills—and their sub-strands is shown below. Sub-strands covered in this unit are in bold.



AC All the terms in this diagram are sourced from the Australian Curriculum.

Relationship to overarching ideas

In the Australian Curriculum: Science, six overarching ideas support the coherence and developmental sequence of science knowledge within and across year levels.

In *Earth's place in space* these overarching ideas are represented by:

Overarching idea	Incorporation in <i>Earth's place in space</i>
Patterns, order and organisation	Students investigate different models in order to explain patterns of observation at different timescales, including over the course of a day, ie, the Sun and Moon rising and setting, and over the course of a year, ie, different constellations visible at different times of the year.
Form and function	Students explore how the characteristics of the Earth, Moon, Sun and stars influence our observations on Earth. They identify the Sun as a source of light and model how it affects the spherical Earth and Moon to bring about day and night and annual patterns in the stars.
Stability and change	Students explore patterns of change, for example, the rising and setting of the Sun and Moon. They identify that these patterns can be seen as stable or changing depending on the timescale, ie, the Moon rises every day but not necessarily in the same place or at the same time.
Scale and measurement	Students consider the relative sizes and positions of planets within the Solar System and construct accurate scaled models. Students discuss the merits of different scales in models depending on the purpose of the model.
Matter and energy	Students recognise the Sun and stars as sources of light energy and the planets and moons as receivers of their light. Students investigate the size and movements of different space objects in the Solar System. Through modelling the orbits of the planets, they investigate the relative speeds of planets and therefore, how much movement energy the planets have.
Systems	Students identify observable components within the Solar System and their movements in relation to one another. Through investigations and models, students relate the interaction of elements in the Solar System to the systems that they experience on Earth, for example, the availability of sunlight.

Curriculum focus

The Australian Curriculum: Science is described by year level, but provides advice across four year groupings on the nature of learners. Each year grouping has a relevant curriculum focus.

Curriculum focus Years 3–6	Incorporation in <i>Earth's place in space</i>
<p>Recognising questions that can be investigated scientifically and investigating them</p>	<p>Students are presented with theories about Earth's place in space. They choose questions that could help evaluate the theories. Students also investigate secondary knowledge on elements of the Solar System, for example, the Sun.</p>

Achievement standards

The achievement standards of the Australian Curriculum: Science indicate the quality of learning that students typically demonstrate by a particular point in their schooling, for example, at the end of a year level. These standards will be reviewed regularly by ACARA and are available from the ACARA website.

By the end of this unit, teachers will be able to make evidence-based judgments on whether the students are achieving below, at or above the Australian Curriculum: Science Year 5 Achievement standard.

General capabilities

The skills, behaviours and attributes that students need to succeed in life and work in the 21st century have been identified in the Australian Curriculum as general capabilities. There are seven general capabilities and they are embedded throughout the units. For further information see: www.australiancurriculum.edu.au

For examples of our unit-specific general capabilities information see the next page.

Earth's place in space—Australian Curriculum General capabilities

General capabilities	Australian Curriculum description	Earth's place in space examples
Literacy	<p>Literacy knowledge specific to the study of science develops along with scientific understanding and skills.</p> <p>Primary Connections learning activities explicitly introduce literacy focuses and provide students with the opportunity to use them as they think about, reason and represent their understanding of science.</p>	<p>In <i>Earth's place in space</i> the literacy focuses are:</p> <ul style="list-style-type: none"> • science journals • TWLH charts • word walls • glossaries • flow charts • role-plays • procedural texts • tables • factual recounts.
 Numeracy	<p>Elements of numeracy are particularly evident in Science Inquiry Skills. These include practical measurement and the collection, representation and interpretation of data.</p>	<p>Students:</p> <ul style="list-style-type: none"> • collect, interpret and represent data about planets in the Solar System • create models with different scales.
Information and communication technology (ICT) competence	<p>ICT competence is particularly evident in Science Inquiry Skills. Students use digital technologies to investigate, create, communicate, and share ideas and results.</p>	<p>Students are given optional opportunities to:</p> <ul style="list-style-type: none"> • use interactive resource technology to view, record and discuss information • use programs, such as Stellarium and Celestia, to visualise Earth's place in space • use ICT to prepare and publish a text.
 Critical and creative thinking	<p>Students develop critical and creative thinking as they speculate and solve problems through investigations, make evidence-based decisions, and analyse and evaluate information sources to draw conclusions. They develop creative questions and suggest novel solutions.</p>	<p>Students:</p> <ul style="list-style-type: none"> • use reasoning to develop questions for inquiry • formulate, pose and respond to questions • develop evidence-based claims.
Ethical behaviour	<p>Students develop ethical behaviour as they explore principles and guidelines in gathering evidence and consider the implications of their investigations on others and the environment.</p>	<p>Students:</p> <ul style="list-style-type: none"> • ask questions of others, respecting each other's point of view.
 Personal and social competence	<p>Students develop personal and social competence as they learn to work effectively in teams, develop collaborative methods of inquiry, work safely, and use their scientific knowledge to make informed choices.</p>	<p>Students:</p> <ul style="list-style-type: none"> • work collaboratively in teams • listen to and abide by rules of a new game • follow a procedural text for working safely • participate in discussions.
 Intercultural understanding	<p>Intercultural understanding is particularly evident in Science as a Human Endeavour. Students learn about the influence of people from a variety of cultures on the development of scientific understanding.</p>	<ul style="list-style-type: none"> • 'Cultural perspectives' opportunities are highlighted where relevant • Important contributions made to science by people from a range of cultures are highlighted where relevant.

Cross-curriculum priorities

There are three cross-curriculum priorities identified by the Australian Curriculum:

- Aboriginal and Torres Strait Islander histories and cultures
- Asia and Australia's engagement with Asia
- Sustainability.

For further information see: www.australiancurriculum.edu.au



Aboriginal and Torres Strait Islander histories and cultures

The PrimaryConnections Indigenous perspectives framework supports teachers' implementation of Aboriginal and Torres Strait Islander histories and cultures in science. The framework can be accessed at: www.science.org.au/primaryconnections

Earth's place in space focuses on the Western science method of gaining knowledge, including using models to test different theories to explain observations. Students are introduced to some of the evidence and reasoning that led scientists to conclude that Earth is a planet orbiting the Sun while rotating on its own axis, and is just one of several planets in the Solar System. For example, students explore how the rising of the Sun and Moon in the sky can be explained by the rotation of the Earth.

Indigenous cultures might have different explanations for observations of the movement of space objects, such as the Sun, Moon and stars in the sky, often referring to Dreamtime. For example, many groups tell stories of a female Sun who walks across the sky during the day. Indigenous people have long studied the night sky, and the position of the stars can be used for navigation, a calendar for food collection, or even serve as a reminder of social rules and norms.

PrimaryConnections recommends working with Aboriginal and Torres Strait Islander community members to access local and relevant cultural perspectives. Protocols for engaging with Aboriginal and Torres Strait Islander community members are provided in state and territory education guidelines. Links to these are provided on the PrimaryConnections website.

Alignment with the Australian Curriculum: English and Mathematics

Strand	Sub-strand	Code	Year 5 content descriptions	Lessons
English– Language	Language variation and change	ACELA1500	Understand that the pronunciation, spelling and meanings of words have histories and change over time	1
	Language for interaction	ACELA1502	Understand how to move beyond making bare assertions and take account of differing perspectives and points of view	1, 4–7
	Text structure and organisation	ACELA1504	Understand how texts vary in purpose, structure and topic as well as the degree of formality	1–4, 6
	Expressing and developing ideas	ACELA1512	Understand the use of vocabulary to express greater precision of meaning, and know that words can have different meanings in different contexts	1, 6, 7
English– Literature	Responding to literature	ACELT1609	Present a point of view about particular literary texts using appropriate metalanguage, and reflecting on the viewpoints of others	1, 3, 4, 5
English– Literacy	Interaction with others	ACELY1699	Clarify understanding of content as it unfolds in formal and informal situations, connecting ideas to students' own experiences and present and justify a point of view	1–7
		ACELY1796	Use interaction skills, for example paraphrasing, questioning and interpreting non-verbal cues and choose vocabulary and vocal effects appropriate for different audiences and purposes	1–7
		ACELY1700	Plan, rehearse and deliver presentations for defined audiences and purposes incorporating accurate and sequences content and multimodal elements	7
	Interpreting, analysing, evaluating	ACELY1703	Use comprehension strategies to analyse information, integrating and linking ideas from a variety of print and digital sources	6
	Creating texts	ACELY1704	Plan, draft and publish imaginative, informative and persuasive print and multimodal texts, choosing text structures, language features, images and sound appropriate to purpose and audience	7
Mathematics– Measurement and Geometry	Using units of measurement	ACMMG108	Choose appropriate units of measurement for length, area, volume, capacity and mass	6
Mathematics– Statistics and Probability	Data representation and interpretation	ACMSP118	Pose questions and collect categorical or numerical data by observation or survey	3, 6
		ACMSP120	Describe and interpret different data sets in context	6

 All the material in the first four columns of this table is sourced from the Australian Curriculum.

Other links are highlighted at the end of lessons where possible. These links will be revised and updated on the website (www.science.org.au/primaryconnections).