Year 7 Work Program — Australian Curriculum:

Science

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 Standards 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 7 to 10, students develop their understanding of microscopic and atomic structures; how systems at a range of scales are shaped by flows of energy and matter and interactions due to forces, and develop the ability to quantify changes and relative amounts. In Year 7, students explore the diversity of life on Earth and continue to develop their understanding of the role of classification in ordering and organising information. They use and develop models such as food chains, food webs and the water cycle to represent and analyse the flow of energy and matter through ecosystems and explore the impact of changing components within these systems. They consider the interaction between multiple forces when explaining changes in an object's motion. They explore the notion of renewable and non-renewable resources and consider how this classification depends on the timescale considered. They investigate relationships in the Earth, sun, moon system and use models to predict and explain events. Students make accurate measurements and control variables to analyse relationships between system components and explore and explain these relationships through increasingly complex representations.
	Achievement standard	By the end of Year 7, students describe techniques to separate pure substances from mixtures. They represent and predict the effects of unbalanced forces, including Earth's gravity, on motion. They explain how the relative positions of the Earth, sun and moon affect phenomena on Earth. They analyse how the sustainable use of resources depends on the way they are formed and cycle through Earth systems. They predict the effect of environmental changes on feeding relationships and classify and organise diverse organisms based on observable differences. Students describe situations where scientific knowledge from different science disciplines has been used to solve a real-world problem. They explain how the solution was viewed by, and impacted on, different groups in society. Students identify questions that can be investigated scientifically. They plan fair experimental methods, identifying variables to be changed and measured. They select equipment that improves fairness and accuracy and describe how they considered safety. Students draw on evidence to support their conclusions. They summarise data from different sources, describe trends and refer to the quality of their data when suggesting improvements to their methods. They communicate their ideas, methods and findings using scientific language and appropriate representations.
		Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), *Australian Curriculum v3.0: Science for Foundation–10*, <www.australiancurriculum.edu.au/Science/Curriculum/F-10>.

	Term overview	Term 1 (Text Chapters 1,2,3,4)	Term 2 (Text Chapter 9)	Term 3 (Text Chapter 5,6)	Term 4 (Text chapter 7,8)
aching and learning		**Water: waste not, want not** During this term students use a local water source to investigate the importance of water, for example the water cycle, properties of water and separation techniques used to provide clean drinking water. Students will: • classify resources as renewable or non-renewable • compare renewable and non-renewable resources • explore the water cycle in terms of changes of state of water and investigate factors that influence the water cycle, emphasising that water is a renewable resource • participate in field work to investigate local water use and management • investigate the differences between pure substances and mixtures and create representations of each • identify the solvent and solute in solutions • use a range of physical separation techniques such as filtration, decantation, evaporation and chromatography • construct and use a range of representations to present and analyse data collected during investigations and fieldwork	**Exemplar unit: Sensational seasons and heavenly bodies** During this term students learn about the interrelationship of the sun, Earth, the moon, and other planets. They explore seasons on Earth and on another planet, and the phases of the moon. Students will: • investigate what causes seasons and how they differ depending on the tilt of the axis and the orbit of the planet • compare the seasons on Earth with the seasons of another planet • compare times for the rotation of Earth, the sun and the moon, and the times for the orbits of Earth and the moon • model the relative movements of Earth, the sun and the moon • research what people used to think caused the phases of the moon • investigate and explain natural phenomena such as the phases of the moon, and solar and lunar eclipses • explore the role of gravity in keeping planets in orbit • use scientific explanations to report on findings from research	**Organising organisms** During this term students explore the impact of human activity on other organisms. They appreciate classification and the relationships between organisms as a platform for making predictions about the consequences of the human activity. Students will: • explore the diversity of living organisms • group organisms on the basis of similarities and differences • explore the history of classification and how it has developed over time • construct and use dichotomous keys • use the taxonomic ranks of kingdom, phylum, class, order, family, genus, species and the scientific conventions for naming species • construct and interpret food chains and webs to show relationships between organisms in an environment • participate in field work to investigate organisms in a local ecosystem • construct and use a range of representations to present and analyse information collected during fieldwork • recognise the role of microorganisms within food chains and food webs	**Moving right along** During this term students investigate forces, and how they can change the motion of an object. They consider the impact of friction on moving objects and appreciate the role of forces in their everyday lives. Students will: • explore different types of forces including friction, air resistance, upthrust and weight • distinguish between mass and weight • investigate common situations where forces are balanced, such as stationary objects or objects moving at a constant speed • investigate common situations where forces are unbalanced, such as objects speeding up or slowing down • draw force diagrams to represent situations where balanced or unbalanced forces are being applied to objects • investigate the effects of applying different forces to familiar objects experimentally to collect quantitative data • identify questions and problems about the use of friction • design and conduct fair tests on the use of friction in our everyday lives
Teaching and learning		• explore and compare separation methods used in the treatment of drinking water for the community and at home • consider the decisions made by local authorities about sustainability and the recycling of grey water and black water. Understand the impact of these decisions on local industry and/or agriculture • evaluate the claims made in newspapers and other media • communicate ideas, findings and solutions to problems using scientific language.	• research moon myths and culture, including Aboriginal and Torres Strait Islander Dreaming stories. **Total eclipse of the sun: 14 November 2012** The Astronomical Association of Queensland, in partnership with the Science Teachers Association of Queensland, has produced material to assist teachers in educating students about the total eclipse of the sun that occurred in North Queensland on 14 November 2012. For further information, see: www.aaq.org.au	• explain the effect of human activity and other living things on local ecosystems • explain how Aboriginal and Torres Strait Islander practices can inform sustainable management of the environment • communicate ideas, findings and solutions to problems using scientific language.	• collect, display, analyse and identify relationships in quantitative data • critique the method used to collect data • communicate ideas, findings and solutions to problems using scientific language.
	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:	Opportunities to engage with:	Opportunities to engage with:	Opportunities to engage with:
	Key to general capabilities and cross-curriculum priorities	Literacy, Numeracy, ICT capability, Critical and creative thinking, Ethical behaviour, Personal and social capability, Intercultural understanding, Aboriginal and Torres Strait Islander histories and cultures, Asia and Australia's engagement with Asia, Sustainability			
Develop assessment	**Assessment** For advice and guidelines on assessment, see 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**: 4 — Science Report	**Week** / **Assessment instrument**: 5 — Supervised assessment: Short response (Written)	**Week** / **Assessment instrument**: 4 — Construct a dichotomous key for a group of items from the same theme, using only observable characteristics.	**Week** / **Assessment instrument**: 5 — • On demand Written task (Unseen stimulus)
		9 — Supervised assessment: Short response (Written)	8 — On demand Written task (seen stimulus)	8 — Supervised assessment: Short response (Written)	8 — Supervised assessment: Short response (Written)
Make judgments and use feedback	**Moderation**	Teachers develop tasks and plan units. Teachers perform informal moderation of student engagement/confidence when applying scientific concepts/methods. 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 moderate randomly sampled folios 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.

Year 7 Science: review for balance and coverage of content descriptions

Science Understanding	1	2	3	4
Biological sciences				
There are differences within and between groups of organisms; classification helps organise this diversity (ACSSU111)			✓	
Interactions between organisms can be described in terms of food chains and food webs; human activity can affect these interactions (ACSSU112)			✓	
Chemical sciences				
Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques (ACSSU113)	✓			
Earth and space sciences				
Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon (ACSSU115)		✓		
Some of Earth's resources are renewable, but others are non-renewable (ACSSU116)	✓			
Water is an important resource that cycles through the environment (ACSSU222)	✓			
Physical sciences				
Change to an object's motion is caused by unbalanced forces acting on the object (ACSSU117)				✓
Earth's gravity pulls objects towards the centre of the Earth (ACSSU118)		✓		✓

Science as a Human Endeavour	1	2	3	4
Nature and development of science				
Scientific knowledge changes as new evidence becomes available, and some scientific discoveries have significantly changed people's understanding of the world (ACSHE119)		✓	✓	
Science knowledge can develop through collaboration and connecting ideas across the disciplines of science (ACSHE223)	✓			
Use and influence of science				
Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations (ACSHE120)	✓			✓
Science understanding influences the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management (ACSHE121)	✓		✓	✓
People use understanding and skills from across the disciplines of science in their occupations (ACSHE224)	✓	✓	✓	

Science Inquiry Skills	1	2	3	4
Questioning and predicting				
Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge (ACSIS124)				✓
Planning and conducting				
Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (ACSIS125)	✓		✓	✓
In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task (ACSIS126)				✓
Processing and analysing data and information				
Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships, including using digital technologies as appropriate (ACSIS129)	✓	✓	✓	✓
Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions (ACSIS130)	✓	✓		✓
Evaluating				
Reflect on the method used to investigate a question or solve a problem, including evaluating the quality of the data collected, and identify improvements to the method (ACSIS131)		✓		✓
Use scientific knowledge and findings from investigations to evaluate claims (ACSIS132)	✓			✓
Communicating				
Communicate ideas, findings and solutions to problems using scientific language and representations using digital technologies as appropriate (ACSIS133)	✓	✓	✓	✓

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