Year 7 Science
Curriculum and assessment plan

ACiQ v9.0

Example A

Level description	Context and cohort considerations
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 to represent and analyse the flow of energy and matter through ecosystems and explore the impact of changing components within these systems. They investigate relationships in the Earth-sun-moon system and use models to predict and explain events. They extend their understanding of the particulate nature of matter and explore how interactions of matter and energy at the sub-microscopic scale determine macroscopic properties. They consider the effects of multiple forces when explaining changes in an object's motion. Students make accurate measurements and analyse relationships between system components. They construct and use models to test hypotheses about phenomena at scales that are difficult to study directly and use these observations and other evidence to draw conclusions. They begin to understand the relationship between science and society and appreciate the need for ethical and cultural considerations when acquiring data. Inquiry questions can help excite students' curiosity and challenge their thinking. Following are examples of inquiry questions that could be used to prompt discussion and exploration: • Mosquitoes are so annoying! What would the impact be if we got rid of them? • What would Australian ecosystems look like without fire? • How do simple machines make our lives easier? • Why is being able to separate mixtures important? • How have systems of classification changed over time? How do they differ across cultures?	Year 7 Science is taught in 3 x 70-minute lessons each week. In the first four weeks of Term 1, students have laboratory access for two lessons each week as they build their laboratory safety skills. From Week 5, each Year 7 class has access to a laboratory for three lessons each fortnight. Further access for Term 4 may be negotiated. Unit 3 has a focus on seagrass beds. If it is not possible to access a suitable marine environment, virtual field work and second-hand data sets can be used. A local alternative such as a flooded river, with particulate pollution, can also be used. Students have access to their own digital device and a shared laptop bank. Use of the textbook (digital or hardcopy) is encouraged. Teacher aides support practical activities.

Unit 1 — Think like a scientist: Physical sciences	Unit 2 — Our small blue planet: Earth and space sciences	Unit 3 — Life under water: Biological sciences	Unit 4 — Clean water for all: Chemical sciences
Duration: 10 weeks	Duration: 10 weeks	Duration: 10 weeks	Duration: 10 weeks
In the world of 24/7 access to information, it is increasingly important for students to think like scientists. Scientists are curious, ask questions and draw evidence-based conclusions. Year 7 students develop confidence in thinking like scientists as they learn about forces, and acting safely like scientists as they develop scientific inquiry practices. Teachers provide feedback on safe practices and science inquiry through an examination. While investigating balanced and unbalanced forces, students develop numeracy skills by using and rounding decimals and comparing the usefulness of different representations of the same data. They also use free body diagrams to communicate their understanding of the effects of forces on the movement of objects. Investigating forces affords students opportunity to strengthen their critical and creative thinking capabilities through developing investigable questions. Students provide evidence of this thinking through a second examination. This unit provides a foundation for Unit 2 where students transfer their understanding of gravitational forces to explain the Earth-sun-moon system.	Watching the sun set and the moon rise may lead students to develop a geocentric view of our place in the universe. Viewed from space however, our small blue planet reveals its position as part of a much larger system. The evidence used to move our geocentric belief to an evidence-based heliocentric understanding challenges students to identify the factors that can lead to changes in scientific knowledge. In researching this change in understanding, students apply reading comprehension strategies and practise critical and creative thinking as they identify and clarify significant information and opinion from a range of sources. Students consider the development and use of models to explain concepts as they encounter ideas in science that are unable to be experienced firsthand. This includes where phenomena are very small, such as atoms, or where they are very large or occurred long ago, such as light travelling across the universe. Students explore the strengths and limitations of using models as representations. They develop a digital model to address misconceptions around the predictable phenomena of eclipses, tides and seasons.	Seagrass beds provide food and habitat for marine organisms, improve water quality by reducing nutrient levels and reduce coastal erosion through stabilisation of sediment. When flood waters carry silt across seagrass beds, adverse change can occur. Environmental scientists use classification tools to measure the biodiversity of an ecosystem and monitor biotic and abiotic factors. This understanding of healthy systems provides a standard against which damage from floodwater can be predicted and monitored, and the success of remediation processes measured. In this unit, students continue to think like scientists as they gain the skills to order and organise organisms and measure the health of seagrass beds. They investigate the impact of floodwaters and predict the effect of silt in this marine ecosystem. There is a focus on sustainability, identification of potential ethical issues with the use of secondary data and recognition of the need for intercultural consideration when accessing field locations in this unit. This supports students to see themselves responding to contemporary science issues as they continue to think like scientists.	Building on the environmental focus of Unit 3, students apply their understanding of the particle model, to design a solution to mitigate the damage caused by floodwater carrying silt into marine ecosystems. Students work in groups to identify a possible solution to the environmental problem of floodwaters impacting marine ecosystems. Engaging successfully in group work builds students' personal and social capability. Through application of critical and creative thinking, students develop investigable questions and in conducting their investigation they practise the safety and inquiry skills gained in Unit 1. They use data to support evidence-based conclusions on the effectiveness of their technique in removing silt from floodwater. In evaluating their procedure and results, students identify unanswered questions, supporting them to understand the iterative nature of science inquiry.

	Unit 1 — Think like a scientist: Physical sciences		Unit 2 — Our small blue planet: Earth and space sciences		Unit 3 — Life under water: Biological sciences		Unit 4 — Clean water for all: Chemical sciences	
	Assessment 1 — Examination	**Term/week**	**Assessment 3 — Investigation**	**Term/week**	**Assessment 4 — Investigation**	**Term/week**	**Assessment 5 — Experimental investigation**	**Term/week**
Assessment	**Description:** Students demonstrate their understanding of safe laboratory protocols and science inquiry. **Technique:** Examination **Mode:** Written **Conditions:** • 30 minutes • supervised	Week 4	**Description:** Students develop a digital model to explain their understanding of the cycles of the Earth-sun-moon system. They identify factors that over time changed our understanding of the effects of these cycles on Earth phenomena. **Technique:** Investigation **Mode:** Multimodal-digital model with written response **Conditions:** • written response 400–500 words	Week 8–9	**Description:** Students research the impact of flood waters on seagrass beds and predict the effect of silt on the ecosystem. **Technique:** Investigation **Mode:** Written **Conditions:** • 400–500 words	Week 9	**Description:** Students plan and conduct an experiment to investigate techniques to remove silt from flood water. **Technique:** Experimental investigation **Mode:** Practical and written **Conditions:** • group work • individual response • written response 400–500 words	Week 9
	Assessment 2 — Examination **Description:** Students represent and explain the effects of balanced and unbalanced forces. **Technique:** Examination **Mode:** Written **Conditions:** • 30 minutes • supervised	Week 9						

	Unit 1 — Think like a scientist: Physical sciences	Unit 2 — Our small blue planet: Earth and space sciences	Unit 3 — Life under water: Biological sciences	Unit 4 — Clean water for all: Chemical sciences
Achievement standard	By the end of Year 7 students explain how biological diversity is ordered and organised. They represent flows of matter and energy in ecosystems and predict the effects of environmental changes. They model cycles in the Earth-sun-moon system and explain the effects of these cycles on Earth phenomena. They represent and explain the effects of forces acting on objects. They use particle theory to explain the physical properties of substances and develop processes that separate mixtures. Students identify the factors that can influence development of and lead to changes in scientific knowledge. They explain how scientific responses are developed and can impact society. They explain the role of science communication in shaping viewpoints, policies and regulations. Students plan and conduct safe, reproducible investigations to test relationships and aspects of scientific models. They identify potential ethical issues and intercultural considerations required for field locations or use of secondary data. They use equipment to generate and record data with precision. They select and construct appropriate representations to organise data and information. They process data and information and analyse it to describe patterns, trends and relationships. They identify possible sources of error in methods and identify unanswered questions in conclusions and claims. They identify evidence to support their conclusions and construct arguments to support or dispute claims. They select and use language and text features appropriately for their purpose and audience when communicating their ideas and findings.	By the end of Year 7 students explain how biological diversity is ordered and organised. They represent flows of matter and energy in ecosystems and predict the effects of environmental changes. 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Moderation	**Calibration:** Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.	**Consensus:** Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.	**Consensus:** Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.	**Consensus:** Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.

Content descriptions	Units				Content descriptions	Units				Content descriptions	Units			
Science understanding	**1**	**2**	**3**	**4**	**Science as a human endeavour**	**1**	**2**	**3**	**4**	**Science inquiry**	**1**	**2**	**3**	**4**
Biological sciences investigate the role of classification in ordering and organising the diversity of life on Earth and use and develop classification tools including dichotomous keys AC9S7U01	☐	☐	☑	☐	**Nature and development of science** explain how new evidence or different perspectives can lead to changes in scientific knowledge AC9S7H01	☐	☑	☐	☐	**Questioning and predicting** develop investigable questions, reasoned predictions and hypotheses to explore scientific models, identify patterns and test relationships AC9S7I01	☑	☑	☐	☑
use models, including food webs, to represent matter and energy flow in ecosystems and predict the impact of changing abiotic and biotic factors on populations AC9S7U02	☐	☐	☑	☐	investigate how cultural perspectives and world views influence the development of scientific knowledge AC9S7H02	☐	☑	☐	☐	**Planning and conducting** plan and conduct reproducible investigations to answer questions and test hypotheses, including identifying variables and assumptions and, as appropriate, recognising and managing risks, considering ethical issues and recognising key considerations regarding heritage sites and artefacts on Country/Place AC9S7I02	☑	☐	☑	☑
Earth and space sciences model cyclic changes in the relative positions of the Earth, sun and moon and explain how these cycles cause eclipses and influence predictable phenomena on Earth, including seasons and tides AC9S7U03	☐	☑	☐	☐	**Use and influence of science** examine how proposed scientific responses to contemporary issues may impact on society and explore ethical, environmental, social and economic considerations AC9S7H03	☐	☑	☐	☐	select and use equipment to generate and record data with precision, using digital tools as appropriate AC9S7I03	☐	☐	☐	☑
Physical sciences investigate and represent balanced and unbalanced forces, including gravitational force, acting on objects, and relate changes in an object's motion to its mass and the magnitude and direction of forces acting on it AC9S7U04	☑	☐	☐	☐	explore the role of science communication in informing individual viewpoints and community policies and regulations AC9S7H04	☐	☐	☑	☐	**Processing, modelling and analysing** select and construct appropriate representations, including tables, graphs, models and mathematical relationships, to organise and process data and information AC9S7I04	☑	☑	☐	☑
Chemical sciences use particle theory to describe the arrangement of particles in a substance, including the motion of and attraction between particles, and relate this to the properties of the substance AC9S7U05	☐	☐	☐	☑						analyse data and information to describe patterns, trends and relationships and identify anomalies AC9S7I05	☑	☐	☑	☐
use a particle model to describe differences between pure substances and mixtures and apply understanding of properties of substances to separate mixtures AC9S7U06	☐	☐	☐	☑						**Evaluating** analyse methods, conclusions and claims for assumptions, possible sources of error, conflicting evidence and unanswered questions AC9S7I06	☑	☐	☑	☐
										construct evidence-based arguments to support conclusions or evaluate claims and consider any ethical issues and cultural protocols associated with using or citing secondary data or information AC9S7I07	☑	☐	☑	☑
										Communicating write and create texts to communicate ideas, findings and arguments for specific purposes and	☐	☑	☐	☑

Content descriptions	Units				Content descriptions	Units				Content descriptions	Units			
										audiences, including selection of appropriate language and text features, using digital tools as appropriate AC9S7I08				

General capabilities	Units			
	1	2	3	4
Critical and creative thinking	☑	☑	☐	☑
Digital literacy	☐	☑	☐	☐
Ethical understanding	☐	☐	☑	☐
Intercultural understanding	☐	☐	☐	☐
Literacy	☐	☑	☐	☐
Numeracy	☑	☐	☐	☐
Personal and social capability	☐	☐	☐	☑

Cross-curriculum priorities	Units			
	1	2	3	4
Aboriginal and Torres Strait Islander histories and cultures	☐	☐	☑	☐
Asia and Australia's engagement with Asia	☐	☐	☐	☐
Sustainability	☐	☐	☑	☑