Year 4 Science
Curriculum and assessment plan

Example

Level description	Context and cohort considerations
In Year 4 students extend their understanding of systems as interactions between related components and analyse patterns to identify that these interactions can occur in predictable ways. They classify system components and create simple models of system interactions, such as food chains and representations of the water cycle. They learn that these models can be used to predict the effect of missing or malfunctioning components. They explore the relationship between form and function by investigating different materials and their properties and learn that classification can enable prediction. They investigate forces that operate from a distance and learn that some interactions result from phenomena that cannot be seen with the naked eye. Students use fair testing to explore relationships between system components. They appreciate the value of using standard units of measurement to measure and compare attributes of systems and the importance of fair methods for drawing conclusions. 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: • How can we keep food fresh and safe to eat without using plastic? • Why do we measure things? • What would happen if there were no ants in a local habitat? • How does friction help or hinder motion? • What's the big deal about the water cycle?	In Year 4, the science curriculum encompasses all four sub-strands of Science understanding, with one lesson per week. Students build on prior knowledge from Year 3 to understand more about their school grounds and the plants and animals that live there. They consolidate their knowledge of solids and liquids when exploring the key processes of the water cycle. In Unit 3, students engage with digital literacy through multimodal presentations, while providing opportunities to incorporate learning experiences associated with the Design and Technologies curriculum. Unit 4 consolidates their science inquiry skills by providing various opportunities to test the movement of objects. **Note:** Across the units, students will be explicitly taught to use safe scientific practices when engaging in hands-on investigations, even when this is not assessed.

Unit 1 — From sky to sea	Unit 2 — Who lives here?	Unit 3 — Materials matter	Unit 4 — Fantastic forces
Duration: 10 weeks	Duration: 10 weeks	Duration: 10 weeks	Duration: 10 weeks
The water cycle describes the movement of water on and through the surface of the Earth. Essentially, it ensures the availability of water for all living organisms. Learning about the water cycle fosters an appreciation for water as a vital resource. In this unit, students identify local water sources (such as creeks, lakes or the ocean) and observe water movement using models or videos. They explore everyday examples of precipitation (such as rain), evaporation (such as washed clothes drying on a washing line or rain puddles drying after a storm) and condensation (such as water droplets on a cold-water bottle). Students explore the water cycle through a series of hands-on activities. They measure and track local rainfall using a rain gauge or secondary data from the Bureau of Meteorology. They observe a 'cloud in a bottle' demonstration and read various informative and imaginative texts to understand the key processes in the water cycle. Students use this knowledge to conduct an experimental investigation to simulate the water cycle, producing an annotated model to describe key processes. Students engage with interactive games and simulations that illustrate the natural water cycle, discussing how scientists study these processes to gain a deeper understanding. They explore how technology aids scientists in modelling the water cycle, and how these models can help identify and address issues related to water resource management. Students recognise that scientific knowledge of the water cycle can be applied to address real-world challenges and meet the needs of communities. As a class activity, they navigate a scenario where a community is facing a water shortage. They work collaboratively in groups to generate ideas and propose solutions (such as rainwater harvesting, water recycling or desalination) based on their understanding of the water cycle.	A single healthy habitat can support hundreds of different species, each playing a unique role in keeping the ecosystem balanced and thriving. In this unit, students draw on their knowledge from Year 3 about living and non-living things, to further understand the biodiversity found at their school. Through hands-on activities, students identify plants and animals present in a chosen habitat, gathering evidence of animals by recording birdsong, finding feathers, footprints or scat, and by using insect traps. They photograph or draw the plants they observe. Students safely conduct investigations to collect and record discrete numerical data (such as number and location) on the decomposers (such as ants, beetles, and earthworms) in their school grounds, using an appropriate method of recording. This enhances their numeracy skills through practical application. They then conduct research to identify the relationship between these animal populations and soil quality. Following their investigations, students classify their organisms as either producers, consumers, or decomposers, and explain the roles these organisms play within the habitat. They apply this knowledge to construct simple food chains to represent feeding relationships. Ecologists use food chain data to provide insights into the health and stability of ecosystems. Students reflect on their own data and what it tells them about the health of their school environment. They then explain the role of data in science inquiry.	In Year 4 students investigate both natural and made materials to understand their different properties, and how these properties influence their practical applications in everyday life. They engage in hands-on activities to test materials for their different properties (such as strength, durability or water-resistance) using a range of tools (such as scissors, jugs and bowls of water) to determine their suitability for different uses. Students examine familiar objects (such as backpacks, lunchboxes or pencil cases) to identify and describe the materials they are made from (such as natural or made fibres, fabric, metals or plastics) and discuss why they are appropriate for their intended use. They explore a case-study of a common problem and the scientific solutions that were developed (such as waterproof clothing or hook-and-loop fasteners) to meet identified needs. Students recognise that scientific knowledge and investigation enhance our understanding of material properties and consider how scientific explanations about materials contribute to solving problems to meet the needs of people. Students explore how using recycled products promotes sustainability and how principles like reducing, reusing, and recycling can be integrated into product design to meet specific needs or solve problems. As a class activity, students identify a school garden need or problem (such as pest control, plant support, wildlife habitat or soil erosion) and suggest ways the problem could be addressed through a design solution, incorporating sustainability principles.	Forces are the pushes and pulls that drive all movement on Earth. They influence everything from a falling leaf to a rocket launch. Forces like gravity, magnetism and friction play essential roles in our daily lives. By exploring these forces, students understand how they shape the world around us and make things move. In this unit students build their science inquiry skills by participating in a range of hands-on activities to explore forces. As a result, they discover the ways forces impact our lives. They carry out push and pull activities using familiar objects (such as toy cars and balls) to understand that a force is a push or pull that can change the motion of an object. Students investigate how friction affects the motion of objects by testing how toy cars travel on different surfaces, and brainstorm ways to reduce and increase friction. To better understand how gravity pulls objects towards the Earth, students drop different objects from the same height and collect data on the effects. They investigate how magnetic forces can affect the motion of objects by testing which materials are attracted to magnets and observing how magnets can move objects without touching them. To demonstrate their understanding of forces, students work with a partner to roll a toy car down a ramp onto a rough surface (e.g. dirt or grass). They conduct an experimental investigation to identify the forces at play in the activity and describe their effects on the objects involved.

	Unit 1		Unit 2		Unit 3		Unit 4	
	Assessment — Water cycle wonders	**Timing**	**Assessment — Natures networks**	**Timing**	**Assessment — Material detectives**	**Timing**	**Assessment — Friction frenzy**	**Timing**
Assessment	**Description:** Students conduct an experimental investigation to simulate the water cycle. They produce a visual or physical model of the water cycle and annotate the model to describe key processes. **Technique:** Experimental investigation **Mode:** Multimodal **Conditions:** • written response 100–200 words • model as negotiated	Week 9	**Description:** Students participate in a supervised assessment to categorise animals and plants found during their investigations as either producers, consumers or decomposers. They identify the roles these organisms have in a habitat and construct simple food chains. They give short answer responses to identify relationships from secondary data and explain the role of data in science inquiry. **Technique:** Supervised assessment **Mode**: Written **Conditions:** • up to 40 minutes, plus 10 minutes perusal time • multiple choice items • short responses up to 25 words per item	Week 9	**Description**: Students choose a familiar object to examine (from a provided list) and gather information about the properties of the materials it is made from. Students describe how each material is suitable for the object and the need it meets. They identify the scientific basis for the solution their object presents. Students create a multimodal presentation to present their findings to their peers. **Technique**: Investigation **Mode:** Multimodal presentation **Conditions:** • spoken/signed responses up to 1 minute • 2–3 presentation slides	Week 9	**Description:** Students work with a partner to roll a toy car down a ramp onto a rough surface. They conduct an experimental investigation to explore how either gravity or friction influences motion. They draw conclusions to identify the forces at play and describe their effects on the objects involved. **Technique:** Experimental investigation **Mode:** Multimodal **Conditions:** • written response 150–200 words • practical as negotiated	Week 9
Achievement standard	By the end of Year 4 students identify the roles of organisms in a habitat and construct food chains. They identify key processes in the water cycle and describe how water cycles through the environment. They identify forces acting on objects and describe their effect. They relate the uses of materials to their properties. They explain the role of data in science inquiry. They identify solutions based on scientific explanations and describe the needs these meet. Students pose questions to identify patterns and relationships and make predictions based on observations. They plan investigations using planning scaffolds, identify key elements of fair tests and describe how they conduct investigations safely. They use simple procedures to make accurate formal measurements. They construct representations to organise data and information and identify patterns and relationships. They compare their findings with those of others, assess the fairness of their investigation, identify further questions for investigation and draw conclusions. They communicate ideas and findings for an identified audience and purpose, including using scientific vocabulary when appropriate.		By the end of Year 4 students identify the roles of organisms in a habitat and construct food chains. They identify key processes in the water cycle and describe how water cycles through the environment. They identify forces acting on objects and describe their effect. They relate the uses of materials to their properties. They explain the role of data in science inquiry. They identify solutions based on scientific explanations and describe the needs these meet. Students pose questions to identify patterns and relationships and make predictions based on observations. They plan investigations using planning scaffolds, identify key elements of fair tests and describe how they conduct investigations safely. They use simple procedures to make accurate formal measurements. They construct representations to organise data and information and identify patterns and relationships. They compare their findings with those of others, assess the fairness of their investigation, identify further questions for investigation and draw conclusions. They communicate ideas and findings for an identified audience and purpose, including using scientific vocabulary when appropriate.		By the end of Year 4 students identify the roles of organisms in a habitat and construct food chains. They identify key processes in the water cycle and describe how water cycles through the environment. They identify forces acting on objects and describe their effect. They relate the uses of materials to their properties. They explain the role of data in science inquiry. They identify solutions based on scientific explanations and describe the needs these meet. Students pose questions to identify patterns and relationships and make predictions based on observations. They plan investigations using planning scaffolds, identify key elements of fair tests and describe how they conduct investigations safely. They use simple procedures to make accurate formal measurements. They construct representations to organise data and information and identify patterns and relationships. They compare their findings with those of others, assess the fairness of their investigation, identify further questions for investigation and draw conclusions. They communicate ideas and findings for an identified audience and purpose, including using scientific vocabulary when appropriate.		By the end of Year 4 students identify the roles of organisms in a habitat and construct food chains. They identify key processes in the water cycle and describe how water cycles through the environment. They identify forces acting on objects and describe their effect. They relate the uses of materials to their properties. They explain the role of data in science inquiry. They identify solutions based on scientific explanations and describe the needs these meet. Students pose questions to identify patterns and relationships and make predictions based on observations. They plan investigations using planning scaffolds, identify key elements of fair tests and describe how they conduct investigations safely. They use simple procedures to make accurate formal measurements. They construct representations to organise data and information and identify patterns and relationships. They compare their findings with those of others, assess the fairness of their investigation, identify further questions for investigation and draw conclusions. They communicate ideas and findings for an identified audience and purpose, including using scientific vocabulary when appropriate.	
Moderation	**Calibration:** Refer to QCAA moderation advice on the QCAA website under the Assessment tab in the learning area.		**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.		**Expert:** 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 explain the roles and interactions of consumers, producers and decomposers within a habitat and how food chains represent feeding relationships AC9S4U01	☐	☑	☐	☐	**Nature and development of science** examine how people use data to develop scientific explanations AC9S4H01	☐	☑	☐	☐	**Questioning and predicting** pose questions to explore observed patterns and relationships and make predictions based on observations AC9S4I01	☑	☐	☐	☑
Earth and space sciences identify sources of water and describe key processes in the water cycle, including movement of water through the sky, landscape and ocean; precipitation; evaporation; and condensation AC9S4U02	☑	☐	☐	☐	**Use and influence of science** consider how people use scientific explanations to meet a need or solve a problem AC9S4H02	☑	☐	☑	☐	**Planning and conducting** use provided scaffolds to plan and conduct investigations to answer questions or test predictions, including identifying the elements of fair tests, and considering the safe use of materials and equipment AC9S4I02	☑	☐	☐	☑
Physical sciences identify how forces can be exerted by one object on another and investigate the effect of frictional, gravitational and magnetic forces on the motion of objects AC9S4U03	☐	☐	☐	☑						follow procedures to make and record observations, including making formal measurements using familiar scaled instruments and using digital tools as appropriate AC9S4I03	☐	☐	☐	☑
Chemical sciences examine the properties of natural and made materials including fibres, metals, glass and plastics and consider how these properties influence their use AC9S4U04	☐	☐	☑	☐						**Processing, modelling and analysing** construct and use representations, including tables, simple column graphs and visual or physical models, to organise data and information, show simple relationships and identify patterns AC9S4I04	☑	☑	☐	☐
										Evaluating compare findings with those of others, consider if investigations were fair, identify questions for further investigation and draw conclusions AC9S4I05	☑	☐	☐	☑
										Communicating write and create texts to communicate findings and ideas for identified purposes and audiences, using scientific vocabulary and digital tools as appropriate AC9S4I06	☐	☑	☑	☐

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	☐	☐	☑	☐