






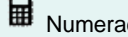
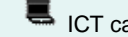
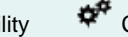
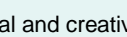
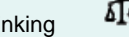
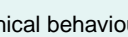

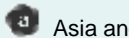
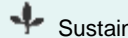


Year 8 Work Program — Australian Curriculum:

Science

Identify curriculum	Year level description (highlighted aspects indicate differences from the previous year level)	<p>The <i>Science Inquiry Skills</i> and <i>Science as a Human Endeavour</i> 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 <i>Science Understanding</i> 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 <i>Science as a Human Endeavour</i> strand can provide relevant contexts in which science can be taught.</p> <p>The order and detail in which the content descriptions are organised into teaching/learning programs are decisions to be made by the teacher.</p> <p>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.</p> <p style="background-color: yellow;">In Year 8, students are introduced to cells as microscopic structures that explain macroscopic properties of living systems. They link form and function at a cellular level and explore the organisation of body systems in terms of flows of matter between interdependent organs. Similarly, they explore changes in matter at a particle level, and distinguish between chemical and physical change. They begin to classify different forms of energy, and describe the role of energy in causing change in systems, including the role of heat and kinetic energy in the rock cycle. Students use experimentation to isolate relationships between components in systems and explain these relationships through increasingly complex representations. They make predictions and propose explanations, drawing on evidence to support their views.</p>
	Achievement standard	<p>By the end of Year 8, students compare physical and chemical changes and use the particle model to explain and predict the properties and behaviours of substances.</p> <p>They identify different forms of energy and describe how energy transfers and transformations cause change in simple systems.</p> <p>They compare processes of rock formation, including the time scales involved.</p> <p>They analyse the relationship between structure and function at cell, organ and body system levels.</p> <p>Students examine the different science knowledge used in occupations.</p> <p>They explain how evidence has led to an improved understanding of a scientific idea and describe situations in which scientists collaborated to generate solutions to contemporary problems.</p> <p>Students identify and construct questions and problems that they can investigate scientifically.</p> <p>They consider safety and ethics when planning investigations, including designing field or experimental methods.</p> <p>They identify variables to be changed, measured and controlled.</p> <p>Students construct representations of their data to reveal and analyse patterns and trends, and use these when justifying their conclusions.</p> <p>They explain how modifications to methods could improve the quality of their data and apply their own scientific knowledge and investigation findings to evaluate claims made by others.</p> <p>They use appropriate language and representations to communicate science ideas, methods and findings in a range of text types.</p> <p><small>Source: Australian Curriculum, Assessment and Reporting Authority (ACARA), <i>Australian Curriculum v3.0: Science for Foundation–10</i>, <www.australiancurriculum.edu.au/Science/Curriculum/F-10>.</small></p>

Teaching and learning	Term overview	Term 1	Term 2	Term 3	Term 4
Teaching and learning		<p>What's the matter? During this term students engage in a range of laboratory-based experiments and investigative learning experiences to explore changes in matter at a particle level and distinguish between chemical and physical changes. They appreciate that scientific knowledge changes as new evidence becomes available. Students will:</p> <ul style="list-style-type: none"> review the nature of scientific inquiry continue to design student-generated investigations using inquiry methods develop skills to safely use a range of laboratory techniques present and evaluate scientific data using a science report genre describe and model the states of matter, elements, compounds and mixtures at a particle level research the history of the representation of matter investigate the chemical differences that exist between elements, compounds and mixtures investigate the relationship between the energy of particles and temperature use symbols and formulas to represent elements and simple compounds 	<p>We will rock you During this term students investigate the dynamic nature of the rock cycle. They appreciate where and why rocks have been used in buildings and monuments in the local area. Students will:</p> <ul style="list-style-type: none"> explore how the forces of contraction, expansion and freezing of water can lead to the weathering of rocks investigate the chemical weathering of rocks create representations of the stages in the formation of igneous, metamorphic and sedimentary rocks identify a range of common rock types using a key based on observable physical and chemical properties recognise that rocks are a collection of different minerals appreciate the timescales involved in rock formation and that the mode of formation determines texture and the minerals contained in the rock investigate the relationship between rate of cooling and crystal formation size research how rocks, minerals and ores, provide valuable resources and are used in aspects of everyday life 	<p>Exemplar unit: Energy for my lifestyle During this term students investigate how energy is generated and transformed in order to meet society's energy requirements while taking into account sustainability and ethical considerations. They research sustainable and renewable energy technologies. Students will:</p> <ul style="list-style-type: none"> pose questions and collaboratively plan fair investigations about the different forms of energy, the effects they have, and the changes they cause in systems conduct fair investigations to build an understanding of the different forms of energy explore energy transfer and transformation use flow diagrams to illustrate energy transfer and transformation recognise that heat energy is often a by-product of energy transfer and transformation collect data and analyse patterns and relationships to draw conclusions about energy transformations appreciate the impact of society's energy-dependent lifestyle consider sustainability and ethical issues surrounding the sources of energy for society 	<p>Multiplying by dividing During this term students explore how organisms reproduce, starting at a cellular level. They focus on cell structure, function and reproduction, and investigate the history, use and ethics of reproductive technologies in mammals. Students will:</p> <ul style="list-style-type: none"> examine a variety of cells using a light microscope or digital technology identify structures within plant and animal cells and describe their function distinguish plant cells from animal cells and create representations of each cell type discuss examples of cell specialisation discuss how cells reproduce research and explore the history, use and ethics of reproductive technologies in mammals describe the structure of each organ in the human reproductive systems and relate their function to the overall function of the system compare and contrast reproductive systems of organisms distinguish between asexual and sexual reproduction communicate ideas and findings using scientific language.
Teaching and learning		<ul style="list-style-type: none"> revise the differences between chemical and physical changes identify evidence that a chemical change has taken place investigate simple reactions collect data and analyse patterns and relationships to draw conclusions about chemical and physical changes. 	<ul style="list-style-type: none"> engage with a geologist to learn about rocks, minerals and their existence and use in the local area participate in field work or use Google Earth to investigate rocks and the use of rocks in the local area communicate ideas and findings using scientific language. 	<ul style="list-style-type: none"> appreciate the impact of an energy-dependent lifestyle. For example, its impact on industry, agriculture and/or marine and terrestrial resource management communicate ideas, findings and solutions to problems in a variety of ways. 	<ul style="list-style-type: none">
	<p>Aboriginal and Torres Strait Islander perspectives</p>	<p>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:</p> <ul style="list-style-type: none"> 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. <p>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.</p>			

	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	Week	Assessment instrument	Week	Assessment instrument	Week	Assessment instrument
	5	Written Scientific Report <ul style="list-style-type: none"> • Template to complete. 	6	Supervised assessment: Short response (Written) <ul style="list-style-type: none"> • graphs and tables • interpret/label diagrams • one word responses to paragraph explanations 	5	Experimental investigation: Scientific report (Written) Collaboratively design a fair investigation to examine energy transformations	4	Research: Concept map (Multimodal) Create a mind map (on paper or electronically) using a list of terms relating to the structure and function of plant and animal cells. This assessment can be written, cut and paste or electronic.
9	Supervised assessment: Short response (Written) <ul style="list-style-type: none"> • graphs and tables • labelled diagrams • written explanations • paragraph 	9	On Demand Written Task <ul style="list-style-type: none"> • Topic known – Mining and indigenous perspective • Unseen stimulus • No notes allowed 	9	Supervised assessment: Short response (Written) <ul style="list-style-type: none"> • graphs and tables • interpret/label diagrams • one word responses to paragraph explanations 	7	Supervised assessment: Short response (Written) <ul style="list-style-type: none"> • graphs and tables • interpret/label diagrams • one word responses to paragraph explanations 	
Make judgments and use feedback	Moderation	Teachers develop tasks, marking schemes and plan units and have a meeting prior to commencement of the unit. Teachers meet after marking to ensure consistency of judgments.	Teachers develop tasks, marking schemes and plan units and have a meeting prior to commencement of the unit. Teachers meet after marking to ensure consistency of judgments.	Teachers develop tasks, marking schemes and plan units and have a meeting prior to commencement of the unit. Teachers meet after marking to ensure consistency of judgments.	Teachers develop tasks, marking schemes and plan units and have a meeting prior to commencement of the unit. Teachers meet after marking to ensure consistency of judgments.			

Year 8 Science: review for balance and coverage of content descriptions

Science Understanding	1	2	3	4
Biological sciences				
Cells are the basic units of living things and have specialised structures and functions (ACSSU149)				✓
Multi-cellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce (ACSSU150)				✓
Chemical sciences				
The properties of the different states of matter can be explained in terms of the motion and arrangement of particles (ACSSU151)	✓			
Differences between elements, compounds and mixtures can be described at a particle level (ACSSU152)	✓			
Chemical change involves substances reacting to form new substances (ACSSU225)	✓			
Earth and space sciences				
Sedimentary, igneous and metamorphic rocks contain minerals and are formed by processes that occur within Earth over a variety of timescales (ACSSU153)		✓		
Physical sciences				
Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems (ACSSU155)			✓	

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 (ACSHE134)	✓			✓
Science knowledge can develop through collaboration and connecting ideas across the disciplines of science (ACSHE226)		✓		
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 (ACSHE135)			✓	✓
Science understandings influence the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management (ACSHE136)			✓	
People use understanding and skills from across the disciplines of science in their occupations (ACSHE227)		✓		✓

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 (AC SIS139)	✓		✓	
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 (AC SIS140)	✓	✓	✓	
In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task (AC SIS141)	✓		✓	
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 (AC SIS144)	✓	✓	✓	✓
Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions (AC SIS145)	✓	✓	✓	✓
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 (AC SIS146)	✓		✓	
Use scientific knowledge and findings from investigations to evaluate claims (AC SIS234)	✓		✓	
Communicating				
Communicate ideas, findings and solutions to problems using scientific language and representations using digital technologies as appropriate (AC SIS148)	✓	✓	✓	✓

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