



Australian Curriculum: Science — Year 9

Year level plan-2023

CURRICULUM	SEMESTER 1		SEMESTER 2	
	Term 1	Term 2	Term 3	Term 4
Unit name	Energy: Heat, Light & Sound	Life in Balance	Radioisotopes & Chemical Reactions	Changing Earth
Unit description	<p>In this unit, students examine, inquire and explain ways in which energy can be transferred through different mediums using the particle model. Students will have opportunities to form hypotheses and investigate quantitative and qualitative data and information on the flow of heat energy. They use these findings, scientific knowledge, and prior understanding in order to form conclusions.</p> <p>Students investigate wave motion and how different mediums affect sound and light transfer. They explore ways in which humans have used and controlled sound and light energy transfer for practical purposes. Students design and conduct investigations to transmit a form of energy through a medium using available equipment and materials. They analyse experimental and second-hand data and identify relationships within the data.</p>	<p>In this unit, students identify human body systems and the ways in which they work together in balance to support life. They outline how essential requirements for life are provided internally through a coordinated approach. Students analyse and predict the effects of the environment on body systems, and discuss how the body responds to changes in the environment and to diseases. They research the positive and negative aspects of vaccination and use evidence to justify decisions related to vaccination. Students consider current and future developments in vaccine technology and reflect on how the needs of society influence the focus of scientific research.</p> <p>Students will engage in the exploration of concepts of change and sustainability within an ecosystem. They develop the understanding that all life is connected through ecosystems and changes to its balance can have an effect on the populations and interrelationships that exist. Students analyse data and develop related recommendations, including ethical considerations. They have the opportunity to investigate and reflect upon the state of Australian environments, locally and nationally, and their individual and collective responsibility for the sustainability of ecosystems.</p>	<p>In this unit, students engage in the exploration of chemical reactions and the application of these in living and non-living systems. They develop understanding that chemical change involves the rearranging of atoms to form new substances. Students examine energy transfer in reactions, the nature and reactions of acids as well as the conservation of mass in chemical reactions. They will explore the development of scientific ideas about atoms and their subatomic particles, protons, neutrons and electrons. Students will investigate the structure and uses of isotopes and consider the processes and products of radioactive decay including radiation and half-life.</p> <p>Students explore chemical reactions and their application in everyday life. They engage in investigations that examines instant cold and heat packs that continue to develop their scientific inquiry skills. Students apply their understanding to consider how the application of chemistry affects people's lives. They design and conduct investigations, assess risk and gather first-hand data. Students analyse data, identifying inconsistencies and describe specific ways to improve the quality of data obtained in their investigations. They explore the application of the chemical concepts to methods used by Australian Indigenous peoples to detoxify food.</p> <p>This unit is supported by a Virtual Reality Module- <i>Elements</i>. Immersive Pedagogy supporting documentation is available as part of this module.</p>	<p>In this unit, students explore the development of the theories such as plate tectonics that have led to current day understanding of the structure of the Earth and geological processes. They investigate geological processes involved in Earth movement, comparing different types of tectonic-plate boundaries and explain the tectonic events that occur at each boundaries type. Students deepen their understanding of geological processes such as mountain building, earthquakes and volcanoes. They are able to identify where specific types of geological activity is likely to occur based on their understanding of plate boundaries.</p> <p>Students explore technological developments that have aided scientists in the study of tectonic-plate movement and explore the current developments in this field. They research the impact of tectonic events such as earthquakes, tsunamis and volcanoes on humans and society as a whole including social, environmental and economic aspects. Students describe where science and technology are contributing to the development of safer buildings and early warning systems.</p>

ASSESSMENT		SEMESTER 1			SEMESTER 2		
		Energy: Heat-AT1	Making waves-AT2	Life in Balance-AT3	Radioisotopes & Chemical Reactions-AT4	Chemical Reactions-AT5	Changing Earth-AT6
Range and balance of summative assessment conventions	Technique	Experimental Investigation	Examination	Examination	Examination	Experimental Investigation	Investigation
	Text type	Scientific report	Short answer	Short answer & explanations	Short answer & comparative report	Scientific report	Scientific report
	Mode	Written & Practical Demonstration	Written	Written	Written	Written & Practical Demonstration	Written
	Conditions	- Class time-3wks - Individual - 600-800 words	- 60mins +5min perusal - Short Response - Exam conditions	- 2x 60mins +10min perusal - Short response - Exam conditions	- 2x 60mins + 10 min perusal - Short response - Exam conditions	- Class time-3wks - Individual - 600-800 words	- Class time-3wks - Individual - 600-800 words
Aspects of the achievement standard							
explain chemical processes and natural radioactivity in terms of atoms and energy transfers					✓		
describe examples of important chemical reactions					✓	✓	
describe models of energy transfer and apply these to explain phenomena		✓	✓				
explain global features and events in terms of geological processes and timescales							✓
analyse how biological systems function and respond to external changes with reference to interdependencies, energy transfers and flows of matter				✓			
describe social and technological factors that have influenced scientific developments				✓			✓
predict how future applications of science and technology may affect people's lives.		✓					✓
design questions that can be investigated using a range of inquiry skills		✓				✓	
design methods that include the control and accurate measurement of variables and systematic collection of data		✓	✓			✓	
describe how they considered ethics and safety		✓				✓	
analyse trends in data		✓	✓	✓	✓	✓	

identify relationships between variables and reveal inconsistencies in results	✓	✓	✓	✓	✓	
analyse their methods and the quality of their data	✓				✓	
explain specific actions to improve the quality of their evidence	✓	✓			✓	
evaluate others' methods and explanations from a scientific perspective	✓				✓	
use appropriate language and representations when communicating their findings and ideas to specific audience	✓	✓	✓	✓	✓	✓

Term 1

Term 2

Term 3

Term 4



indicates opportunities that summative assessments provide for students to demonstrate evidence against aspects of the achievement standard