Government of **Western Australia**
School Curriculum and Standards Authority

Western Australian Curriculum

Science

Scope and sequence of the mandated curriculum content

Pre-primary–Year 10 | Revised curriculum

For familiarisation in 2025

Acknowledgement of Country

Kaya. The School Curriculum and Standards Authority (the Authority) acknowledges that our offices are on Whadjuk Noongar boodjar and that we deliver our services on the country of many traditional custodians and language groups throughout Western Australia. The Authority acknowledges the traditional custodians throughout Western Australia and their continuing connection to land, waters and community. We offer our respect to Elders past and present.

Disclaimer

Any resources such as texts, websites and so on that may be referred to in this document are provided as examples of resources that teachers can use to support their learning programs. Their inclusion does not imply that they are mandatory or that they are the only resources relevant to the course. Teachers must exercise their professional judgement as to the appropriateness of any they may wish to use.

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Contents

Overview

The current Western Australian Curriculum: Science was adopted from the Australian Curriculum version 8.1.

The revised Western Australian Curriculum: Science is adopted and adapted from the Australian Curriculum version 9.

Guide to reading this document

The Scope and sequence shows the **mandated** curriculum for teaching, written as **content descriptions** across year levels so that a sequence of content can be viewed across the years of schooling from Pre-primary to Year 10.

The document is organised by two Science strands: Science understanding and Science inquiry.

The Science understanding strand includes: Biological sciences; Chemical sciences; Earth and space sciences; and Physical sciences.

The Science inquiry strand includes: Questioning and predicting; Planning and conducting; Processing, modelling and analysing; Evaluating; Communicating; and Collaborating and applying.

The table below outlines the learning area organisation for the Pre-primary to Year 10 Science curriculum.

Science understanding			
Biological sciences	Chemical sciences	Earth and space sciences	Physical sciences

Science inquiry					
Questioning and predicting	Planning and conducting	Processing, modelling and analysing	Evaluating	Communicating	Collaborating and applying

Pre-primary–Year 6

Strand: Science understanding

Sub-strand: Biological sciences

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants and animals have basic needs that are met by the places they live	Plants and animals have external features that serve a purpose and by which they can be grouped	Plants and animals have life cycles through which they grow, change and have offspring	Living things can be distinguished from non-living and once-living things, and grouped by their characteristics	Producers, consumers and decomposers have roles within a habitat and interact in ways that can be represented by food chains	Living things have structural and behavioural adaptations that enable their survival in their habitat	The growth and survival of living things are affected by the changing conditions of their environment and the influence of human activities

Sub-strand: Chemical sciences

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Objects are made of various materials that have observable properties	Materials can be changed physically without changing their composition	Materials can be combined for a particular purpose	The observable properties of solids and liquids and how adding or removing heat leads to a change of state	Processed materials, including fibres, metals, glass and plastics, are made from raw materials, such as wool, ores, sand and oil, and have a range of physical	The observable properties of solids, liquids and gases can be explained by the motion and arrangement of atoms and molecules (particles)	Materials can undergo reversible changes and irreversible changes

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				properties that influence their use		

Sub-strand: Earth and space sciences

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Daily and seasonal changes in the environment affect our local community and the world around us	Water is a natural resource that comes from a range of sources and is used by people, plants and animals in different ways	Earth is a planet in the solar system that orbits a star (the Sun)	Soils, rocks and minerals are important Earth resources, and are used by humans and other living things in different and interconnected ways	Weathering, erosion, transportation and deposition cause slow or rapid change to Earth's surface	The movement of Earth and other planets relative to the Sun and how Earth's rotation on its axis and revolution around the Sun relate to cyclic observable phenomena, including the day/night cycle	The effect of sudden geological events on Earth's surface, such as tsunamis, earthquakes and volcanic eruptions, and extreme weather, such as cyclones, extreme heat and floods

Sub-strand: Physical sciences

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
The way objects move depends on factors, including their size, shape, material and the force applied	The strength and direction of a push or a pull force affects how an object moves or changes shape	Sound energy is produced by a range of natural and human-made sources and can be sensed	Energy can move from one thing to another (transfer), and change form (transform)	Forces are exerted by one object on another through direct contact, such as friction, or from a distance, such as magnetism and gravity	Light energy travels from a source in a straight path and can be absorbed, reflected, refracted, form shadows and be sensed	The transfer and transformation of energy in electrical circuits, including the role of circuit components, insulators and conductors

Strand: Science inquiry

Sub-strand: Questioning and predicting

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Pose questions and make predictions based on prior knowledge and shared experiences	Pose questions, explore ideas and make predictions based on knowledge and experiences		Pose questions and make predictions based on planned observations of phenomena that include variables to be measured and changed		Pose testable questions that include variables to be measured and changed, and apply science knowledge to make predictions	

Sub-strand: Planning and conducting

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Participate in guided and self-initiated investigations making observations and assessing risks	Engage in guided investigations to explore and answer questions, test predictions, and assess risks		Plan and conduct investigations, including elements of fair tests, and consider the material and equipment risks		Plan and conduct fair, safe and repeatable investigations	
No content	Make and record observations, including informal measurements		Make and record observations, including formal measurements using familiar scaled instruments		Use equipment to observe, measure and record data	

Sub-strand: Processing, modelling and analysing

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Represent and discuss observations and identify patterns	Sort and order data using provided tables and represent data using visual or physical models		Organise and represent data using tables, column graphs and models to identify patterns		Organise and represent data using tables, graphs and models to identify the relationships between measured and changed variables	

Sub-strand: Evaluating

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Discuss similarities and differences between predictions and observations	Compare observations to predictions and identify further questions for investigation		Compare findings with those of others, and to predictions; consider if investigations were fair; and identify questions for further investigation		Compare findings with those of others, and to predictions; evaluate the fairness of an investigation and suggest improvements; and pose questions for further investigation	

Sub-strand: Communicating

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Share questions, predictions, observations and ideas with others	Communicate observations, ideas, and findings using everyday and scientific vocabulary		Communicate ideas using scientific vocabulary		Communicate ideas in a variety of ways, including scientific reports with appropriate language features	

Sub-strand: Collaborating and applying

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Use the senses to learn about the natural and physical world and develop scientific ideas	Use science knowledge and understandings to make decisions and choices in their environment		Use science knowledge to propose explanations for observed phenomena and solutions to problems		Use science knowledge to develop considered responses to problems, at a local and global level, through investigation and research	

Years 7–10

Strand: Science understanding

Sub-strand: Biological sciences

Year 7	Year 8	Year 9	Year 10
Classification helps to order and organise the diversity of life on Earth into a hierarchy from kingdom to species; classification tools, including dichotomous keys, can be developed and used to classify organisms	Cells are the basic units of living things and can be viewed with a compound microscope; animal cells have specialised structures and functions, including the cell membrane, cytoplasm, nucleus and mitochondria; plant cells have specialised structures and functions, including the cell membrane, cytoplasm, nucleus, mitochondria, cell wall, chloroplasts and large vacuoles	Plants and animals have structural, behavioural and physiological adaptations that enable their survival in their environment	Cell division processes of meiosis and mitosis produce new cells with chromosome numbers specific to their role; chromosomes contain genes that are composed of DNA (deoxyribonucleic acid)
Food chains and food webs can be used to represent energy flow in ecosystems and predict possible impacts of human activity	Flowering plant and vertebrate systems carry out specialised functions that enable them to survive and reproduce, including systems for gas exchange, transportation of materials around the organism and reproduction	Organisms have mechanisms to respond to changes in their environment; endotherms and ectotherms respond differently to changes in external temperature; tropisms help plants respond to external stimuli	Patterns of monohybrid inheritance, including autosomal dominant/recessive and sex-linked recessive inheritance, can be predicted using pedigrees and Punnett square crosses

Year 7	Year 8	Year 9	Year 10
		Population size and species diversity can be affected by abiotic and biotic factors; sampling techniques can be used to monitor abiotic factors and estimate numbers of organisms; ecological monitoring can be used to inform ecosystem health and impacts of human activity	The theory of evolution by natural selection explains the past and present diversity of living things, including variation within a species, adaptations and speciation

Sub-strand: Chemical sciences

Year 7	Year 8	Year 9	Year 10
Properties of the different states of matter can be explained by the motion and arrangement of particles; states can change with the addition or removal of energy	Matter is composed of atoms which contain protons, neutrons and electrons; matter can be classified as elements or compounds which can be compared using different representations, including symbols, formulae and models	The atomic number and mass number of an element can be used to determine the number of protons, neutrons and electrons in an atom of the element; isotopes of an element have the same number of protons but different numbers of neutrons in their nuclei and have the same chemical properties	The ability of atoms to form chemical bonds can be explained by the arrangement of electrons in the atom; ionic bonding involves electron transfer and covalent bonding involves sharing of electrons
Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques, including decantation, filtration, evaporation, crystallisation, chromatography and distillation	Elements of the periodic table can be classified as metals and non-metals based on their physical properties	The structure and properties of atoms relate to the organisation of the elements in the periodic table; elements in the same group on the periodic table have similar properties	Reactions follow general patterns that help to predict the reaction products, including precipitation reactions and reactions of acids with bases, metals and carbonates; word and balanced chemical equations can be used to represent these reactions
	Changes to substances can be classified as physical or chemical; chemical changes involve the formation of new substances	Compounds are formed when atoms lose, gain or share electrons; non-metal elements combine to form covalent substances; positively charged ions and negatively charged ions combine to form ionic	The rate at which a reaction occurs can be altered by changing factors, including temperature, concentration and the surface area of a reactant

Year 7	Year 8	Year 9	Year 10
		compounds; compounds can be represented using chemical formulae and models	
		Chemical reactions involve rearranging atoms to form new substances; word and balanced chemical equations can be used to represent the rearrangement of atoms in a chemical reaction and demonstrate the law of conservation of mass	

Sub-strand: Earth and space sciences

Year 7	Year 8	Year 9	Year 10
Celestial objects can be classified as planets, stars, moons, asteroids, meteors, comets, constellations and galaxies; planets in our solar system have distinguishing features, including composition, temperature, size, orbit, rotation, tilt of axis, moons and rings	The theory of plate tectonics explains global patterns of geological activity, including the formation of features at divergent, convergent and transform plate boundaries	Global systems, including the carbon and water cycles, rely on interactions involving the biosphere, lithosphere, hydrosphere and atmosphere	The formation of stars, galaxies and solar systems has continued since the time of the Big Bang; stars have a life cycle determined by their mass
Predictable phenomena on Earth caused by its position relative to the Sun and the Moon, including lunar phases, eclipses, seasons and tides	Rocks are composed of minerals; the key processes of the rock cycle are involved in the formation of igneous, sedimentary and metamorphic rocks; the properties of these rocks reflect their formation and influence their use	Changes to global systems can be used to explain patterns of global climate change	Space exploration contributes to knowledge of the formation and evolution of the universe and Earth, as well as providing useful tools and technologies to improve our life on Earth
	Minerals can be classified using physical properties, including colour, streak, lustre, transparency, hardness and cleavage; useful resources can be extracted from minerals		

Sub-strand: Physical sciences

Year 7	Year 8	Year 9	Year 10
Change to an object's motion is caused by unbalanced forces, including friction, gravitational, magnetic and electrostatic forces; the unit of measurement for force is the newton	The different forms of energy can be classified as either kinetic or potential energy; energy transformations and transfers cause change within systems	Sound waves are longitudinal waves produced by vibrating objects; sound waves travel through solids, liquids and gases at different speeds; sound is reflected when coming into contact with a solid or liquid surface	Motion can be quantitatively determined; quantities, including time, distance, displacement, speed, velocity and acceleration can be classified as scalar or vector; vector diagrams can be used to represent the magnitude and direction of motion
Simple machines, including levers, inclined planes and wheels and axles, provide a mechanical advantage, including force, distance and speed advantage	Heat is transferred by conduction in solids, convection in liquids and gases, and radiation in all states; heat can be reflected and absorbed	Light is an electromagnetic wave; light is made up of photons that have both particle and wave properties; light can be reflected from plane and curved mirrors and refracted when passing through concave and convex lenses	Newton's laws of motion can be used to predict motion; the relationship between force, mass and acceleration of objects can be quantitatively determined

Year 7	Year 8	Year 9	Year 10
	The flow of electricity through a circuit is affected by the type of circuit; a load placed in a circuit transforms electrical energy into other forms of energy; safety switches and circuit breakers are devices installed in buildings to protect people and electrical systems		The law of conservation of energy can be applied to analyse system efficiency in terms of energy inputs and outputs, transfers and transformations

Strand: Science inquiry

Sub-strand: Questioning and predicting

Year 7	Year 8	Year 9	Year 10
Propose investigable questions and make predictions based on scientific knowledge to explore scientific models, identify patterns and test relationships		Propose investigable questions and hypotheses to test relationships and develop explanatory models	

Sub-strand: Planning and conducting

Year 7	Year 8	Year 9	Year 10
Plan and conduct reproducible investigations to answer questions; recognising and managing risks and considering ethical issues		Plan and conduct valid and reproducible investigations to answer questions and test hypotheses, developing and following risk assessments, and considering ethical issues	
Select and use equipment to generate and record data with precision, using digital tools as appropriate		Select and use equipment to generate and record data with precision to obtain appropriate sample sizes and replicable data, using digital tools as appropriate	

Sub-strand: Processing, modelling and analysing

Year 7	Year 8	Year 9	Year 10
Construct appropriate representations, including tables, graphs, models and mathematical relationships, to organise and process data and information		Select and construct appropriate representations, including tables, graphs, descriptive statistics, models and mathematical relationships, to organise and process data and information	
Analyse data and information to describe patterns and relationships, identify anomalies and draw conclusions based on evidence		Analyse and connect a variety of data and information to identify and explain patterns, relationships and anomalies, and draw conclusions based on evidence	

Sub-strand: Evaluating

Year 7	Year 8	Year 9	Year 10
Reflect on scientific investigations, including evaluating the quality of the data collected, and identifying improvements		Evaluate validity and reliability of methods and validity of conclusions, including identifying possible sources of error, and describe specific ways to improve the quality of the data	
Construct evidence-based arguments to support conclusions or evaluate claims		Construct arguments based on analysis of a variety of evidence to support conclusions or evaluate claims	

Sub-strand: Communicating

Year 7	Year 8	Year 9	Year 10
Communicate ideas, findings and arguments for specific purposes and audiences, including selection of appropriate content, language and text features, using digital tools as appropriate		Communicate scientific ideas and information for specific purposes and audiences, including constructing evidence-based arguments and selection of appropriate content, language and text features, using digital tools as appropriate	

Sub-strand: Collaborating and applying

Year 7	Year 8	Year 9	Year 10
Illustrate how the development of scientific knowledge has benefited from collaboration across disciplines and the contributions of people from a range of cultures		Illustrate how advances in scientific understanding often rely on developments in technologies and engineering and technological and engineering advances are often linked to scientific discoveries	
Illustrate how science understanding and skills have influenced the development of individual, community and workplace practices		Illustrate how proposed scientific responses to contemporary issues may impact on society	