Government of Western Australia
School Curriculum and Standards Authority

Western Australian Curriculum

Science

Proposed Year Level Descriptions | Pre-primary–Year 10

Draft for consultation | Not for implementation

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 teaching and learning programs. Their inclusion does not imply that they are mandatory or that they are the only resources relevant to the learning area syllabus.

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Contents

Overview

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

Western Australia provided feedback to the Australian Curriculum, Assessment and Reporting Authority (ACARA) during the consultation for the Australian Curriculum.

The proposed revisions to the Western Australian Curriculum: Science are adopted and adapted from the Australian Curriculum version 9.

Guide to reading this document

This document shows the current Western Australian Curriculum: Science curriculum Year Level Descriptions in the first column, the comparable Australian Curriculum version 9 Year Level Descriptions in the centre column, and the proposed Year Level Descriptions for Western Australia in the third column.

Pre-primary

Current WA Curriculum	Australian Curriculum v9	Proposed WA Curriculum
The Science content includes the three strands of Science Understanding, Science Inquiry Skills and Science as a Human Endeavour. The three strands of the curriculum are interrelated and their content is taught in an integrated way. The order and detail in which the content descriptions are organised into teaching and learning programs are decisions to be made by the teacher. **Incorporating the key ideas of science** From Pre-primary to Year 2, students learn that observations can be organised to reveal patterns, and that these patterns can be used to make predictions about phenomena. In Pre-primary, students observe and describe the behaviours and properties of everyday objects, materials and living things. They explore change in the world around them, including changes that impact on them, such as the weather, and changes they can effect, such as making things move or change shape. They learn that seeking answers to questions they pose and making observations is a core part of science and use their senses to gather different types of information.	In Foundation, learning in Science builds on the Early Years Learning Framework and each student's prior learning and experiences. Science encourages students to explore their environment and be curious about their surroundings. Students build wonder and their natural curiosity by observing everyday objects, materials and living things and by exploring changes in the world around them, including changes they can effect, such as making things move or change shape. They learn that observations can be organised to make patterns and that these patterns can be used to make predictions about phenomena. They seek answers to questions they pose using their senses to gather different types of information. They understand that making observations and predictions is a core part of science. 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: • Why do we have different senses? How do we use them? • Why is sorting important? • How are a spider and a fly alike and different? • Are wheels the only way to get around? • Why do people describe things differently?	In the early childhood phase of schooling, children have an intrinsic curiosity about their immediate world. Asking questions leads to speculation and the testing of ideas. Exploratory, intentional play is a central feature of their investigations. Children use their senses to observe and gather information, describing, making comparisons, sorting, and classifying to create an order that is meaningful. In Pre-primary, learning in Science builds on the Early Years Learning Framework and each child's prior learning and experiences. Children explore daily and seasonal changes in the environment, build wonder and their natural curiosity by observing everyday objects, the materials from which they are made, and how they move. They explore changes in the world around them, including those they can affect, such as making things move or change shape. They recognise that plants and animals share the same basic needs, and these can be met by their environment. Children learn that observations and experiences can be used to pose questions and make predictions. They participate in investigations and record their observations using a range of strategies. Children share their questions, predictions and ideas with others and develop scientific ideas about the natural and physical world.

Year 1

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The science inquiry skills and science as a human endeavour 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 science understanding 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 order and detail in which the content descriptions are organised into teaching and learning programs are decisions to be made by the teacher. **Incorporating the key ideas of science** From Pre-primary to Year 2, students learn that observations can be organised to reveal patterns, and that these patterns can be used to make predictions about phenomena. In Year 1, students infer simple cause-and-effect relationships from their observations and experiences, and begin to link events and phenomena with observable effects and to ask questions. They observe changes that can be large or small and happen quickly or slowly. They explore the properties of familiar objects and phenomena, identifying similarities and differences. Students begin to value counting as a means of comparing observations, and are introduced to ways of organising their observations.	In Year 1 students extend their understanding of patterns by exploring patterns in daily and seasonal events, recognising that all living things share the same basic needs, and that objects can behave in predictable ways. They infer relationships from their observations and experiences and begin to link function with observable properties. They observe that changes to objects and events can be large or small and happen quickly or slowly. Students pose questions and make predictions based on their observations and are introduced to ways of organising their observations to identify patterns. They appreciate that science involves observing, asking questions about and describing changes in objects and events. 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: • Does a fish have a home? • How do we know what season it is? • What makes playgrounds fun? How do playground designers come up with ideas? • How can we tell if something has changed? • How does science help us care for ourselves and other living things?	In the early childhood phase of schooling, children have an intrinsic curiosity about their immediate world. Asking questions leads to speculation and the testing of ideas. Exploratory, intentional play is a central feature of their investigations. Children use their senses to observe and gather information, describing, making comparisons, sorting, and classifying to create an order that is meaningful. In Year 1, children explore water as a natural resource and how it is used by people, plants, and animals in different ways. They appreciate that sound energy is produced by a range of sources and can be sensed by the body. They sort plants and animals based on their observations of external features. Children understand that physical changes to materials do not affect their composition. Children pose questions and make predictions based on their observations and experiences. They engage in guided investigations to explore and test predictions and record these observations using visual and physical models. They compare their observations with their predictions and communicate findings with others. Children use their science knowledge to make decisions and propose explanations.

Year 2

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The science inquiry skills and science as a human endeavour 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 science understanding 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 order and detail in which the content descriptions are organised into teaching and learning programs are decisions to be made by the teacher. **Incorporating the key ideas of science** From Pre-Primary to Year 2, students learn that observations can be organised to reveal patterns, and that these patterns can be used to make predictions about phenomena. In Year 2, students describe the components of simple systems, such as stationary objects subjected to pushes or pulls, or combinations of materials, and show how objects and materials interact through direct manipulation. They observe patterns of growth and change in living things, and describe patterns and make predictions. They explore the use of resources from Earth and are introduced to the idea of the flow	In Year 2 students build on their experiences of the natural and physical world to identify the components of simple systems. They appreciate that Earth is a planet in space and identify other celestial objects. They explore the ways components in a system interact, such as by using their bodies or combining and manipulating objects to make sounds. They build on their understanding of properties of materials to recognise that those properties stay the same when the material is changed physically. They continue to build their understanding of patterns by observing that some patterns, such as the changing positions of the sun, moon and stars, can only be observed over certain timescales. As they explore patterns and relationships, they use counting and informal measurements to make and compare observations and recognise that organising these observations in tables makes it easier to identify and represent patterns. They appreciate that science involves making and organising observations to identify patterns and relationships, and that these patterns and relationships are the basis of scientific predictions. 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:	In the early childhood phase of schooling, children have an intrinsic curiosity about their immediate world. Asking questions leads to speculation and the testing of ideas. Exploratory, intentional play is a central feature of their investigations. Children use their senses to observe and gather information, describing, making comparisons, sorting, and classifying to create an order that is meaningful. In Year 2, children build on their experiences of the physical world and how objects can move or change shape when force is applied. They recognise that Earth is a planet in the solar system that orbits a star. Children build on their understanding of the properties of materials by investigating the effects of combining different materials. They observe and compare the life cycles of plants and animals. Children engage in investigations to explore ideas and answer questions. They make and record observations using informal measurements, and sort and order data using provided tables. They compare their observations with their predictions and identify further questions. Children use scientific vocabulary to explain observed phenomena and make decisions in their environment.

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of matter when considering how water is used. They use counting and informal measurements to make and compare observations and begin to recognise that organising these observations in tables makes it easier to show patterns.	• Who does science? • How do we know Earth is round? • How can we make and sense music? • What's the best material? Why? • How does the sky change over time?	

Year 3

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The science inquiry skills and science as a human endeavour 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 science understanding 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 order and detail in which the content descriptions are organised into teaching and learning programs are decisions to be made by the teacher. **Incorporating the key ideas of science** Over Years 3 to 6, students develop their understanding of a range of systems operating at different time and geographic scales. In Year 3, students observe heat and its effects on solids and liquids and begin to develop an understanding of energy flows through simple systems. In observing day and night, they develop an appreciation of regular and predictable cycles. Students order their observations by grouping and classifying; in classifying things as living or non-living they begin to recognise that classifications are not always easy to define or apply. They begin to quantify	In Year 3 students explore the value of grouping and classifying objects and events based on similarities and differences. In classifying things as living or non-living they begin to recognise that classifications are not always easy to define or apply. Students contrast patterns of growth and change in living things; compare characteristics of soils, rocks and minerals; and classify states of matter. They learn that key processes such as heat transfer can cause predictable change in simple systems. They recognise that change is described and measured in terms of differences over time and begin to quantify their observations to enable comparison. They learn more-sophisticated ways of identifying and representing relationships, including the use of tables and graphs to identify patterns and relationships. They appreciate that science involves conducting fair tests to answer questions or test predictions, and that scientific explanations are based on 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: • Do plants, birds and frogs grow up too? • Is soil alive? • Is jelly a liquid or a solid?	In the middle to late childhood phase of schooling, students develop ideas about science that relate to their lives, answer questions, and solve real-world problems of particular interest to their age group. In this phase of schooling, students tend to use a trial-and-error approach to their science investigations. As they progress, they begin to work in a more systematic way. The notion of a 'fair test' and the idea of variables are developed, as well as other forms of science inquiry. Understanding the importance of measurement in quantifying changes in systems is also fostered. In Year 3, students classify things as living or once-living, and group them based on their features and begin to recognise that classifications are not always easy to define or apply. They identify important Earth resources and how humans and other living things use them in interconnected ways. Students classify states of matter and understand that a change of state is caused by adding or removing heat. They learn that key processes such as energy transfer can cause predictable change in simple systems, and that energy can be transformed. Students pose questions that include variables to be changed and measured. They plan and conduct investigations and compare their findings with others,

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their observations to enable comparison, and learn more sophisticated ways of identifying and representing relationships, including the use of tables and graphs to identify trends. They use their understanding of relationships between components of simple systems to make predictions.	• Why is a spoon hot in soup and cold in ice cream? • Can you do science without a fair test?	and to predictions. They represent observations and data using simple tables and column graphs or other visual or physical models and communicate ideas and findings using scientific vocabulary. Students use science knowledge to propose explanations for observed phenomenon and solutions to problems.

Year 4

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The science inquiry skills and science as a human endeavour 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 science understanding 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 order and detail in which the content descriptions are organised into teaching and learning programs are decisions to be made by the teacher. **Incorporating the key ideas of science** Over Years 3 to 6, students develop their understanding of a range of systems operating at different time and geographic scales. In Year 4, students broaden their understanding of classification and form and function through an exploration of the properties of natural and processed materials. They learn that forces include non-contact forces and begin to appreciate that some interactions result from phenomena that can't be seen with the naked eye. They begin to appreciate that current systems, such as Earth's surface, have characteristics that have resulted from past changes and that living	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?	In the middle to late childhood phase of schooling, students develop ideas about science that relate to their lives, answer questions, and solve real-world problems of particular interest to their age group. In this phase of schooling, students tend to use a trial-and-error approach to their science investigations. As they progress, they begin to work in a more systematic way. The notion of a 'fair test' and the idea of variables are developed, as well as other forms of science inquiry. Understanding the importance of measurement in quantifying changes in systems is also fostered. In Year 4, students appreciate that Earth's surface changes over time due to a range of contributing factors. They create simple models of system interactions, such as food chains to understand consumers, producers, and decomposers. They investigate different materials and their properties and relate these to their use. Students investigate forces that operate from a distance, such as magnetism, and direct contact, such as friction. Students plan and conduct investigations and make predictions based on their observations and science knowledge. They understand the value of using formal measurements and appropriate scaled instruments to collect and record data. They organise and represent

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things form part of systems. They understand that some systems change in predictable ways, such as through cycles. They apply their knowledge to make predictions based on interactions within systems, including those involving the actions of humans.	• 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?	data using tables and column graphs appropriately to identify patterns. Students use science knowledge to propose explanations and solutions to problems and identify questions for further investigation.

Year 5

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The science inquiry skills and science as a human endeavour 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 science understanding 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 order and detail in which the content descriptions are organised into teaching and learning programs are decisions to be made by the teacher. **Incorporating the key ideas of science** Over Years 3 to 6, students develop their understanding of a range of systems operating at different time and geographic scales. In Year 5, students are introduced to cause and effect relationships through an exploration of adaptations of living things and how this links to form and function. They explore observable phenomena associated with light and begin to appreciate that phenomena have sets of characteristic behaviours. They broaden their classification of matter to include gases and begin to see how matter structures the world around them.	In Year 5 students continue to explore the relationship between form and function by investigating how features of living things enable them to survive in their habitat. They identify stable and dynamic aspects of systems and appreciate that current systems, such as Earth's surface, have characteristics that have resulted from past changes. They recognise that models are useful for investigating relationships between system components and can be used to predict the effects of changes. They explore observable phenomena associated with light and analyse patterns to identify that these phenomena have sets of characteristic behaviours. They begin to explain how matter structures the world around them. They develop explanations for the patterns they observe and recognise the importance of reflecting on their methods to identify potential sources of error before 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: • Why has the Australian coastline changed over time? • Is an empty glass really empty? • Why does my shadow change?	In the middle to late childhood phase of schooling, students develop ideas about science that relate to their lives, answer questions, and solve real-world problems of particular interest to their age group. In this phase of schooling, students tend to use a trial-and-error approach to their science investigations. As they progress, they begin to work in a more systematic way. The notion of a 'fair test' and the idea of variables are developed, as well as other forms of science inquiry. Understanding the importance of measurement in quantifying changes in systems is also fostered. In Year 5, students investigate how the structural and behavioural adaptations of living things enable them to survive in their habitat. They model the relationship between the sun and the planets in the solar system and illustrate how Earth's rotation on its axis and revolution around the sun relate to observable cyclic phenomena. Students explore observable phenomena associated with light and analyse patterns to identify that these phenomena have sets of characteristic behaviours. They model the motion and arrangement of atoms and molecules (particles) and explain observable properties of matter. Students pose relevant questions that include variables to be changed and measured. They plan and

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Students consider Earth as a component within a solar system and use models for investigating systems at astronomical scales. Students begin to identify stable and dynamic aspects of systems, and learn how to look for patterns and relationships between components of systems. They develop explanations for the patterns they observe.	• How has science shaped our community? • What if emus could fly?	conduct safe investigations and use equipment to measure and record data appropriately. Students process and represent data appropriately and describe patterns and relationships. They compare their methods and findings with those of others, and to predictions. They communicate their science knowledge using appropriate language.

Year 6

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The science inquiry skills and science as a human endeavour 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 science understanding 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 order and detail in which the content descriptions are organised into teaching and learning programs are decisions to be made by the teacher. **Incorporating the key ideas of science** Over Years 3 to 6, students develop their understanding of a range of systems operating at different time and geographic scales. In Year 6, students explore how changes can be classified in different ways. They learn about transfer and transformations of electricity, and continue to develop an understanding of energy flows through systems. They link their experiences of electric circuits as a system at one scale to generation of electricity from a variety of sources at another scale and begin to see links between these systems. They develop a view	In Year 6 students develop an understanding of interdependencies between systems as they explore the relationship between physical conditions of habitats and the growth and survival of living things and investigate the effect of the relative positions of Earth and the sun on phenomena such as day length. They identify and classify components in electrical circuits and learn to describe energy flows in terms of transfer and transformation. They are introduced to ways to classify changes to substances. Students begin to appreciate the role of controlling variables in fair testing and the value of accuracy in measurements. They generalise about relationships between events, phenomena and systems and use identified patterns, trends and relationships to develop scientific explanations and draw reasoned 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 would life be different if we couldn't harness electrical energy? • What if Earth were not on a tilt? • Are you more likely to win a Nobel prize in science as a team or an individual? • Why is it important for a test to be 'fair'?	In the middle to late childhood phase of schooling, students develop ideas about science that relate to their lives, answer questions, and solve real-world problems of particular interest to their age group. In this phase of schooling, students tend to use a trial-and-error approach to their science investigations. As they progress, they begin to work in a more systematic way. The notion of a 'fair test' and the idea of variables are developed, as well as other forms of science inquiry. Understanding the importance of measurement in quantifying changes in systems is also fostered. In Year 6, students explore the relationship between changes to the physical conditions of habitats and the growth and survival of living things. They investigate the effects of sudden geological changes and extreme weather on the surface of Earth. Students identify and classify components in electrical circuits and learn to describe energy flows in terms of transfer and transformation. They are introduced to ways to classify changes to substances as reversible and irreversible. Students pose specific questions that include variables to be changed and measured and apply science knowledge to predictions. They plan and conduct repeatable investigations, and measure and record

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of Earth as a dynamic system, in which changes in one aspect of the system impact on other aspects; similarly, they see that the growth and survival of living things are dependent on matter and energy flows within a larger system. Students begin to see the role of variables in measuring changes and the value of accuracy in these measurements. They learn how to look for patterns and to use these to identify and explain relationships by drawing on evidence.	• How does the weather affect local habitats?	data with reasonable precision. Students identify dependent and independent variables and describe observed patterns and relationships. They compare methods and findings and pose questions for further investigation. Students communicate their ideas and findings and use science knowledge to develop considered responses to problems.

Year 7

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The science inquiry skills and science as a human endeavour 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 science understanding 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 order and detail in which the content descriptions are organised into teaching and learning programs are decisions to be made by the teacher. **Incorporating the key ideas of science** 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. 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 such as food chains, food webs and the water cycle to	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	In the early adolescence phase of schooling, students continue to develop their understanding of important concepts and make connections between different areas of science. Scientific ideas and models are used to explain phenomena and events, and to understand applications of science in their daily life. 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 such as food chains and food webs to represent energy flow in ecosystems. 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 investigate relationships in the Earth-sun-moon system and use models to predict and explain events. They consider the interaction between multiple forces when explaining changes in an object's motion. Students construct and use models to test predictions about phenomena at scales that are difficult to study directly and use these observations to draw conclusions. They make accurate measurements and control variables to analyse relationships between system components. They explore and explain these relationships through appropriate representations and

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represent and analyse the flow of energy and matter through ecosystems and explore the impact of changing components within these systems. They consider the interaction between multiple forces when explaining changes in an object's motion. They explore the notion of renewable and non-renewable resources and consider how this classification depends on the timescale considered. They investigate relationships in the Earth-sun-moon system and use models to predict and explain events. Students make accurate measurements and control variables to analyse relationships between system components. They explore and explain these relationships through appropriate representations and consider the role of science in decision making processes.	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?	consider the role of science in decision making processes.

Year 8

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The science inquiry skills and science as a human endeavour 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 science understanding 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 order and detail in which the content descriptions are organised into teaching and learning programs are decisions to be made by the teacher. **Incorporating the key ideas of science** 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. 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	In Year 8 students are introduced to cells as microscopic structures that explain macroscopic features of living systems. They connect form and function at an organ level and explore the organisation of a body system in terms of flows of matter between interdependent organs. They continue to develop a view of Earth as a dynamic system, in which change occurs across a range of timescales. They classify different types of energy and describe the role of energy in causing change in systems, including the role of energy and forces in the geosphere. They learn to classify matter at the atomic level and distinguish between chemical and physical change. They understand that chemical reactions also involve energy. Students use experimentation to isolate relationships between components in systems and explain these relationships through increasingly complex representations. They consider the magnitude of properties and events and use appropriate units to describe proportional relationships. 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:	In the early adolescence phase of schooling, students continue to develop their understanding of important concepts and make connections between different areas of science. Scientific ideas and models are used to explain phenomena and events, and to understand applications of science in their daily life. In Year 8, students are introduced to cells as microscopic structures and explore the organisation of body systems in terms of the flow of matter between interdependent organs. They learn to classify matter at the atomic level and distinguish between chemical and physical changes. They continue to develop a view of Earth as a dynamic system, in which change occurs across a range of timescales and begin to apply their understanding of energy and forces to global systems such as continental movement. They classify different types of energy and describe the role of energy in causing change in systems. Students use experimentation to isolate relationships between components in systems and explain these relationships through increasingly complex representations. They consider the magnitude of properties and events and use appropriate units to describe proportional relationships. They make predictions and propose explanations, drawing on

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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 while considering other points of view.	• Can we predict changes to the shape and position of continents? • Are facts enough? How much does science communication matter? • How can we tell if a substance has changed? • How can we best measure what we cannot directly see? • How is a leaf like a lung?	evidence to support their views while considering other points of view.

Year 9

Current WA Curriculum	Australian Curriculum v9	Proposed WA Curriculum
The science inquiry skills and science as a human endeavour 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 science understanding 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 order and detail in which the content descriptions are organised into teaching and learning programs are decisions to be made by the teacher. **Incorporating the key ideas of science** 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. In Year 9, students consider the operation of systems at a range of scales. They explore ways in which the human body as a system responds to its external environment and the interdependencies between biotic and abiotic components of ecosystems. They	In Year 9 students consider the operation of systems at a range of scales and how those systems respond to external changes in order to maintain stability. They explore ways in which the human body system responds to changes in the external environment through physiological feedback mechanisms and the reproductive processes that enable a species to respond to a changing environment over time. They are introduced to the notion of the atom as a system of protons, electrons and neutrons, and how this system can change through nuclear decay. They learn that matter can be rearranged through chemical change and that these changes play an important role in many systems. They are introduced to the concepts of conservation of matter and energy and begin to develop a more sophisticated view of energy transfer. They explore these concepts as they relate to the global carbon cycle. Students begin to consider how well a sample or model represents the phenomena under study and use a range of evidence to support their 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: • Why was the discovery of neutrons important?	In the middle adolescence phase of schooling, students build on their understanding of important concepts and continue to develop scientific ideas and models to explain phenomena and events. They consider how advances in science, technologies and engineering impact society. In Year 9, students explore the interdependencies between abiotic and biotic components of ecosystems and how adaptations enable organisms to survive and respond to changes in their external environment. They are introduced to the arrangement of elements on the periodic table and how matter can be rearranged through chemical change. They appreciate how changes to global systems can impact global climate. They begin to develop a more sophisticated view of energy transfer. Students begin to consider how well a sample or model represents the phenomena under study and use a range of evidence to support their conclusions. They carry out more independent investigations to collect a variety of data and begin to evaluate the validity and reproducibility of methods.

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are introduced to the notion of the atom as a system of protons, electrons and neutrons, and how this system can change through nuclear decay. They learn that matter can be rearranged through chemical change and that these changes play an important role in many systems. They are introduced to the concept of the conservation of matter and begin to develop a more sophisticated view of energy transfer. They begin to apply their understanding of energy and forces to global systems such as continental movement.	• How is scientific consensus established? What if it isn't? • Could synthesised organs make organ donation obsolete? • How does the carbon cycle affect life on Earth? • How do different technologies help humans to communicate?	

Year 10

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The science inquiry skills and science as a human endeavour 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 science understanding 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 order and detail in which the content descriptions are organised into teaching and learning programs are decisions to be made by the teacher. **Incorporating the key ideas of science** In the Year 10 curriculum students explore systems at different scales and connect microscopic and macroscopic properties to explain phenomena. Students explore the biological, chemical, geological and physical evidence for different theories, such as the theories of natural selection and the Big Bang. Students develop their understanding of atomic theory to understand relationships within the periodic table. They understand that motion and forces are related by applying physical laws. They learn about the relationships between aspects of the living, physical	In Year 10 students explore the biological, chemical, geological and astronomical evidence for different theories, such as the theory of natural selection and the big bang theory. Through investigating natural selection and processes of heredity they come to understand the evolutionary feedback mechanisms that ensure the continuity of life. They appreciate how energy drives the Earth system and how climate models simulate the flow of energy and matter within and between Earth's spheres. Students develop a more sophisticated understanding of atomic theory to understand patterns and relationships within the periodic table. They understand that motion and forces are related by applying physical laws and can be modelled mathematically. Students analyse and synthesise data from systems at multiple scales to develop evidence-based explanations for phenomena. They learn that all models involve assumptions and approximations, and that this can limit the reliability of predictions based on those models. 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: • Why is the periodic table such a big deal?	In the middle adolescence phase of schooling, students build on their understanding of important concepts and continue to develop scientific ideas and models to explain phenomena and events. They understand how advances in science, technologies and engineering impact society. In Year 10, students investigate natural selection and processes of heredity to understand the evolutionary feedback mechanisms that ensure the continuity of life. They develop a more sophisticated understanding of atomic theory to understand patterns and relationships within the periodic table, and they investigate how rates of chemical reactions can change. They appreciate how space exploration has contributed to knowledge of the formation and evolution of the universe and improved our life on Earth. They understand that motion and forces are related by applying physical laws and can be modelled mathematically. Students analyse and synthesise data from systems at multiple scales to develop evidence-based explanations for phenomena. They evaluate the validity and reproducibility of investigation methods and suggest specific improvements. They learn that all models involve assumptions and approximations, and

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and chemical world that are applied to systems on a local and global scale and this enables them to predict how changes will affect equilibrium within these systems.	• How do we know what is science and what is pseudoscience? • Why is accelerating climate change a threat to biodiversity? • Just because we can, should we? • How have advanced computing and big data changed science?	that this can limit the reliability of predictions based on those models.