SCIENCE CURRICULUM VICTORIA

GRADE L3/4 - L9/10

VISIT: **3P.STEMSCOPES.SCIENCE**

stemscopes SCIENCE

3P Learning

CONTENTS

GRADE L3/4

Module Name	Grade	Standard	Description
Properties of Materials	L3/4	**VCSSU.3-4.3.2.**	Natural and processed materials have a range of physical properties; these properties can influence their use (VCSSU060)
		VCSSU.3-4.3.2.1.	Describing a range of common materials, such as metals or plastics, and their uses
		VCSSU.3-4.3.2.2.	Investigating a particular property across a range of materials
		VCSSU.3-4.3.2.3.	Selecting materials for a specified use based on their properties
		VCSSU.3-4.1.1.	Science knowledge helps people to understand the effects of their actions (VCSSU056)
		VCSSU.3-4.1.1.1.	Considering how the use of materials including solids and liquids can affect the environment in different ways, for example, fertilisers and food and drink containers
		VCSSU.3-4.1.1.2.	Exploring how science has contributed to understanding and resolving issues related to the effects of human activities, for example, clearing of bushland to build housing and roads and management of waste
		VCSSU.3-4.1.1.3.	Investigating how people can use science to select appropriate materials for their work, for example, builders, clothing designers, engineers, gardeners and chefs
		VCSIS.3-4.3.1.	Use formal measurements in the collection and recording of observations (VCSIS068)
		VCSIS.3-4.3.1.1.	Making and recording measurements using familiar formal units and appropriate abbreviations, such as seconds (s), grams (g), centimetres (cm) and millilitres (mL)
Objects and Motion	L3/4	**VCSSU.3-4.5.2.**	Forces can be exerted by one object on another through direct contact or from a distance (VCSSU064)
		VCSSU.3-4.5.2.2.	Investigating the effect of forces on the behaviour of an object through different actions, for example, throwing, dropping, bouncing and rolling
		VCSSU.3-4.1.1.3.	Investigating how people can use science to select appropriate materials for their work, for example, builders, clothing designers, engineers, gardeners and chefs
		VCSIS.3-4.4.1.	Compare results with predictions, suggesting possible reasons for findings (VCSIS070)

		VCSIS.3-4.4.1.3.	Comparing, in small groups, results of investigations and accounting for differences, including explanation of their reasoning
		VCSIS.3-4.4.2.	Reflect on an investigation, including whether a test was fair or not (VCSIS071)
		VCSIS.3-4.4.2.1.	Discussing as a whole class the idea of fairness in testing
		VCSIS.3-4.4.2.2.	Discussing which aspects of the investigation helped improve fairness, and any aspects that weren't fair
Plant and Animal Extinction	L3/4	**VCSSU.3-4.2.1.**	Living things can be grouped on the basis of observable features and can be distinguished from non-living things (VCSSU057)
		VCSSU.3-4.2.1.1.	Exploring differences between living, once living and products of living things
		VCSIS.3-4.5.1.	Represent and communicate observations, ideas and findings to show patterns and relationships using formal and informal scientific language (VCSIS072)
		VCSIS.3-4.5.1.1.	Using simple explanations and arguments, reports or graphical representations to communicate ideas to other students
		VCSIS.3-4.5.1.2.	Communicating with other students carrying out similar investigations to share experiences and improve investigation skills
		Friction	L3/4
		VCSSU.3-4.5.2.3.	Comparing and contrasting the effect of friction on different surfaces, for example, the abrasion of tyres and shoes on a range of surfaces
		VCSSU.3-4.1.1.3.	Investigating how people can use science to select appropriate materials for their work, for example, builders, clothing designers, engineers, gardeners and chefs
		VCSIS.3-4.4.1.3.	Comparing, in small groups, results of investigations and accounting for differences, including explanation of their reasoning
		VCSIS.3-4.4.2.	Reflect on an investigation, including whether a test was fair or not (VCSIS071)
		VCSIS.3-4.4.2.1.	Discussing as a whole class the idea of fairness in testing
		VCSIS.3-4.4.2.2.	Discussing which aspects of the investigation helped improve fairness, and any aspects that weren't fair

Magnets	L3/4	**VCSSU.3-4.5.2.**	Forces can be exerted by one object on another through direct contact or from a distance (VCSSU064)
		VCSSU.3-4.5.2.4.	Exploring the forces of attraction and repulsion between magnets
		VCSSU.3-4.1.1.3.	Investigating how people can use science to select appropriate materials for their work, for example, builders, clothing designers, engineers, gardeners and chefs
		VCSIS.3-4.1.1.	With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge (VCSIS065)
		VCSIS.3-4.1.1.1.	Listing shared experiences as a whole class and identifying possible investigations
		VCSIS.3-4.4.2.3.	Reflecting on investigations, identifying what went well, what was difficult or didn't work so well, and how well the investigation helped answer the question
Parts of Animals	L3/4	**VCSSU.3-4.2.1.**	Living things can be grouped on the basis of observable features and can be distinguished from non-living things (VCSSU057)
		VCSSU.3-4.2.1.3.	Identifying variations in the features of animals, for example, body covering, ear shapes or number of legs
		VCSIS.3-4.2.1.	Suggest ways to plan and conduct investigations to find answers to questions including consideration of the elements of fair tests (VCSIS066)
		VCSIS.3-4.2.1.1.	Working in groups, with teacher guidance, to plan ways to investigate questions and evaluating which ways might be most successful
		VCSIS.3-4.2.1.2.	Exploring, with teacher guidance, different ways to conduct investigations and connecting these to the types of questions asked
Parts of Plants	L3/4	**VCSSU.3-4.2.1.**	Living things can be grouped on the basis of observable features and can be distinguished from non-living things (VCSSU057)
		VCSSU.3-4.2.1.2.	Identifying variations in the features of plants, for example, colour and shape of leaves, or types of flowers
		VCSIS.3-4.2.1.	Suggest ways to plan and conduct investigations to find answers to questions including consideration of the elements of fair tests (VCSIS066)
		VCSIS.3-4.2.1.1.	Working in groups, with teacher guidance, to plan ways to investigate questions and evaluating which ways might be most successful

		VCSIS.3-4.2.1.2.	Exploring, with teacher guidance, different ways to conduct investigations and connecting these to the types of questions asked
Objects in the Sky	L3/4	**VCSSU.3-4.4.1.**	Earth's rotation on its axis causes regular changes, including night and day (VCSSU061)
		VCSSU.3-4.4.1.1.	Modelling the relative sizes and movement of the Sun, Earth and Moon
		VCSIS.3-4.5.1.	Represent and communicate observations, ideas and findings to show patterns and relationships using formal and informal scientific language (VCSIS072)
		VCSIS.3-4.5.1.1.	Using simple explanations and arguments, reports or graphical representations to communicate ideas to other students
		VCSIS.3-4.5.1.2.	Communicating with other students carrying out similar investigations to share experiences and improve investigation skills
Patterns in Space	L3/4	**VCSSU.3-4.4.1.**	Earth's rotation on its axis causes regular changes, including night and day (VCSSU061)
		VCSSU.3-4.4.1.3.	Constructing sundials and investigating how they work
		VCSSU.3-4.1.1.3.	Investigating how people can use science to select appropriate materials for their work, for example, builders, clothing designers, engineers, gardeners and chefs
		VCSIS.3-4.2.2.2.	Using a variety of tools to make observations, for example, digital cameras, thermometers, rulers and scales
		VCSIS.3-4.3.2.3.	Discussing how to graph data presented in a table
Changes from Heat	L3/4	**VCSSU.3-4.3.1.**	A change of state between solid and liquid can be caused by adding or removing heat (VCSSU059)
		VCSSU.3-4.3.1.1.	Investigating how liquids and solids respond to changes in temperature, for example water changing to ice, or melting chocolate
		VCSSU.3-4.3.1.2.	Exploring how changes from solid to liquid and liquid to solid can help us recycle materials
		VCSSU.3-4.1.1.	Science knowledge helps people to understand the effects of their actions (VCSSU056)
		VCSSU.3-4.1.1.2.	Exploring how science has contributed to understanding and resolving issues related to the effects of human activities, for example, clearing of bushland to build housing and roads and management of waste

		VCSIS.3-4.1.1.	With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge (VCSIS065)
		VCSIS.3-4.1.1.1.	Listing shared experiences as a whole class and identifying possible investigations
		VCSIS.3-4.2.2.	Safely use appropriate materials, tools, equipment and technologies (VCSIS067)
		VCSIS.3-4.2.2.1.	Discussing and recording safety rules for use of equipment as a whole class
		VCSIS.3-4.4.2.3.	Reflecting on investigations, identifying what went well, what was difficult or didn't work so well, and how well the investigation helped answer the question
Quick Changes to Land	L3/4	**VCSSU.3-4.4.2.**	Earth's surface changes over time as a result of natural processes and human activity (VCSSU062)
		VCSSU.3-4.4.2.2.	Considering the effect of events such as floods and extreme weather on landscapes
		VCSIS.3-4.5.1.	Represent and communicate observations, ideas and findings to show patterns and relationships using formal and informal scientific language (VCSIS072)
		VCSIS.3-4.5.1.1.	Using simple explanations and arguments, reports or graphical representations to communicate ideas to other students
		VCSIS.3-4.5.1.2.	Communicating with other students carrying out similar investigations to share experiences and improve investigation skills
Slow Changes to Land	L3/4	**VCSSU.3-4.4.2.**	Earth's surface changes over time as a result of natural processes and human activity (VCSSU062)
		VCSSU.3-4.4.2.1.	Considering how different human activities cause erosion of Earth's surface
		VCSSU.3-4.4.2.3.	Exploring a local area that has changed as a result of natural processes, for example, an eroded gully, sand dunes or river banks
		VCSSU.3-4.1.1.	Science knowledge helps people to understand the effects of their actions (VCSSU056)
		VCSSU.3-4.1.1.2.	Exploring how science has contributed to understanding and resolving issues related to the effects of human activities, for example, clearing of bushland to build housing and roads and management of waste
Life Cycles	L3/4	**VCSSU.3-4.2.2.**	Different living things have different life cycles and depend on each other and the environment to survive (VCSSU058)

		VCSSU.3-4.2.2.1.	Making and recording observations of living things as they develop through their life cycles, for example, insects, birds, frogs and flowering plants
		VCSIS.3-4.3.2.3.	Discussing how to graph data presented in a table
		VCSIS.3-4.4.1.3.	Comparing, in small groups, results of investigations and accounting for differences, including explanation of their reasoning
Fossils	L3/4	**VCSSU.3-4.2.1.**	Living things can be grouped on the basis of observable features and can be distinguished from non-living things (VCSSU057)
		VCSSU.3-4.2.1.1.	Exploring differences between living, once living and products of living things
		VCSIS.3-4.5.1.	Represent and communicate observations, ideas and findings to show patterns and relationships using formal and informal scientific language (VCSIS072)
		VCSIS.3-4.5.1.1.	Using simple explanations and arguments, reports or graphical representations to communicate ideas to other students
		VCSIS.3-4.5.1.2.	Communicating with other students carrying out similar investigations to share experiences and improve investigation skills
Survival of the Fittest	L3/4	**VCSSU.3-4.2.2.**	Different living things have different life cycles and depend on each other and the environment to survive (VCSSU058)
		VCSSU.3-4.2.2.4.	Predicting the effects when living things in feeding relationships are removed or die out in an area
		VCSIS.3-4.3.2.	Use a range of methods including tables and column graphs to represent data and to identify patterns and trends (VCSIS069)
		VCSIS.3-4.3.2.1.	Using provided tables to organise materials and objects based on observable properties
		VCSIS.3-4.4.1.	Compare results with predictions, suggesting possible reasons for findings (VCSIS070)
		VCSIS.3-4.4.1.1.	Identifying and discussing numerical and visual patterns in data collected from students' investigations and from other sources
		VCSIS.3-4.4.1.2.	Discussing how well predictions matched results from an investigation
Environmental Changes and Effects	L3/4	**VCSSU.3-4.2.2.**	Different living things have different life cycles and depend on each other and the environment to survive (VCSSU058)
		VCSSU.3-4.2.2.2.	Recognising that environmental factors can affect life cycles, for example, fire and seed germination

		VCSSU.3-4.1.1.	Science knowledge helps people to understand the effects of their actions (VCSSU056)
		VCSSU.3-4.1.1.2.	Exploring how science has contributed to understanding and resolving issues related to the effects of human activities, for example, clearing of bushland to build housing and roads and management of waste
		VCSIS.3-4.3.2.4.	Identifying and discussing numerical and visual patterns in data collected from students' investigations and from other sources
Energy and Electric Currents	L3/4	**VCSSU.3-4.5.1.**	Heat can be produced in many ways and can move from one object to another; a change in the temperature of an object is related to the gain or loss of heat by the object (VCSSU063)
		VCSSU.3-4.5.1.1.	Describing how heat can be produced, for example, through friction or by burning
		VCSSU.3-4.1.1.3.	Investigating how people can use science to select appropriate materials for their work, for example, builders, clothing designers, engineers, gardeners and chefs
		VCSIS.3-4.1.1.	With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge (VCSIS065)
		VCSIS.3-4.1.1.2.	Reflecting on familiar situations to make predictions with teacher guidance
		VCSIS.3-4.2.2.	Safely use appropriate materials, tools, equipment and technologies (VCSIS067)
		VCSIS.3-4.2.2.1.	Discussing and recording safety rules for use of equipment as a whole class
		VCSSU.3-4.5.1.2.	Exploring how heat can be transferred through conduction
		VCSSU.3-4.5.1.3.	Recognising that we can feel heat and measure its effects using a thermometer
Energy and Collision	L3/4	**VCSSU.3-4.5.2.**	Forces can be exerted by one object on another through direct contact or from a distance (VCSSU064)
		VCSSU.3-4.5.2.1.	Exploring how non-contact forces are similar to contact forces in terms of objects pushing and pulling another object
		VCSSU.3-4.1.1.3.	Investigating how people can use science to select appropriate materials for their work, for example, builders, clothing designers, engineers, gardeners and chefs

		VCSIS.3-4.1.1.	With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge (VCSIS065)
		VCSIS.3-4.1.1.1.	Listing shared experiences as a whole class and identifying possible investigations
		VCSIS.3-4.4.2.3.	Reflecting on investigations, identifying what went well, what was difficult or didn't work so well, and how well the investigation helped answer the question
Earth's Rotation	L3/4	**VCSSU.3-4.4.1.**	Earth's rotation on its axis causes regular changes, including night and day (VCSSU061)
		VCSSU.3-4.4.1.2.	Describing timescales for the rotation of the Earth
		VCSIS.3-4.2.2.2.	Using a variety of tools to make observations, for example, digital cameras, thermometers, rulers and scales
		VCSIS.3-4.3.2.	Use a range of methods including tables and column graphs to represent data and to identify patterns and trends (VCSIS069)
		VCSIS.3-4.3.2.1.	Using provided tables to organise materials and objects based on observable properties
Food Chains and Food Webs	L3/4	**VCSSU.3-4.2.2.**	Different living things have different life cycles and depend on each other and the environment to survive (VCSSU058)
		VCSSU.3-4.2.2.3.	Investigating the roles of living things in a habitat, for example, producers, consumers or decomposers
		VCSIS.3-4.3.2.2.	Discussing with teacher guidance which graphic organisers will be most useful in sorting or organising data arising from investigations
		VCSIS.3-4.3.2.4.	Identifying and discussing numerical and visual patterns in data collected from students' investigations and from other sources
		VCSIS.3-4.5.1.	Represent and communicate observations, ideas and findings to show patterns and relationships using formal and informal scientific language (VCSIS072)
		VCSIS.3-4.5.1.1.	Using simple explanations and arguments, reports or graphical representations to communicate ideas to other students
		VCSIS.3-4.5.1.2.	Communicating with other students carrying out similar investigations to share experiences and improve investigation skills

GRADE L5/6

Module Name	Grade	Standard	Description
Properties of Water	L5/6	**VCSSU.5-6.3.1.**	Solids, liquids and gases behave in different ways and have observable properties that help to classify them (VCSSU076)
		VCSSU.5-6.3.1.1.	Rxploring the way solids, liquids and gases change under different situations, for example, heating and cooling
		VCSSU.5-6.3.1.2.	Observing that gases have mass and take up space, demonstrated by using balloons or bubbles
		VCSSU.5-6.1.1.	Scientific understandings, discoveries and inventions are used to inform personal and community decisions and to solve problems that directly affect people's lives (VCSSU073)
		VCSIS.5-6.1.1.3.	Applying experience from previous investigations to predict the outcomes of investigations in new contexts
		VCSIS.5-6.2.1.	With guidance, plan appropriate investigation types to answer questions or solve problems and use equipment, technologies and materials safely, identifying potential risks (VCSIS083)
		VCSIS.5-6.2.1.1.	Following a given procedure to design an experimental or field investigation
		VCSIS.5-6.2.2.	Decide which variables should be changed, measured and controlled in fair tests and accurately observe, measure and record data (VCSIS084)
		VCSIS.5-6.2.2.1.	Discussing in groups how investigations can be made as fair as possible
		VCSIS.5-6.3.1.2.	Using digital technologies to record data as digital images or in spreadsheets and to present data in tables and simple graphs
		VCSSU.5-6.3.2.1.	Investigating the three changes of state in water
Adaptations	L5/6	**VCSSU.5-6.2.1.**	Living things have structural features and adaptations that help them to survive in their environment (VCSSU074)
		VCSSU.5-6.2.1.1.	Explaining how particular adaptations aid survival, for example, nocturnal behaviour, silvery coloured leaves of dune plants
		VCSSU.5-6.2.1.2.	Describing and listing adaptations of living things suited for particular Australian environments
		VCSSU.5-6.1.1.3.	Considering how decisions are made to grow particular plants and crops depending on environmental conditions

		VCSIS.5-6.1.1.	With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be based on previous experiences or general rules (VCSIS082)
		VCSIS.5-6.1.1.1.	Exploring a range of questions that can be asked about a problem or phenomena and, with guidance, identifying those questions that could be investigated by students
		VCSIS.5-6.2.1.2.	Experiencing a range of ways of investigating questions, including experimental testing, creating models, internet research, field observations, simulations and trial and error methods
		VCSIS.5-6.3.1.	Construct and use a range of representations, including tables and graphs, to record, represent and describe observations, patterns or relationships in data (VCSIS085)
		VCSIS.5-6.4.1.	Compare data with predictions and use as evidence in developing explanations (VCSIS086)
		VCSIS.5-6.4.1.1.	Discussing the difference between data and evidence
		VCSIS.5-6.5.1.3.	Using labelled diagrams, including cross-sectional representations, to communicate ideas and processes
		VCSIS.5-6.5.1.2.	Using a variety of communication modes, for example, reports, explanations, arguments, debates and procedural accounts, to communicate science ideas
		VCSSU.5-6.2.2.3.	Researching organisms that live in extreme environments, for example, Antarctica, a desert or deep sea
		VCSSU.5-6.1.1.6.	Designing shelters for living things that are exposed to changed or harsh environments, for example, as a result of bushfire or displacement
Classifying Matter	L5/6	**VCSSU.5-6.3.1.**	Solids, liquids and gases behave in different ways and have observable properties that help to classify them (VCSSU076)
		VCSSU.5-6.3.1.3.	Recognising that not all substances can be easily classified as solids, liquids or gases on the basis of their observable properties
		VCSIS.5-6.1.1.	With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be based on previous experiences or general rules (VCSIS082)

		VCSIS.5-6.1.1.1.	Exploring a range of questions that can be asked about a problem or phenomena and, with guidance, identifying those questions that could be investigated by students
		VCSIS.5-6.2.1.2.	Experiencing a range of ways of investigating questions, including experimental testing, creating models, internet research, field observations, simulations and trial and error methods
		VCSIS.5-6.2.2.	Decide which variables should be changed, measured and controlled in fair tests and accurately observe, measure and record data (VCSIS084)
		VCSIS.5-6.2.2.1.	Discussing in groups how investigations can be made as fair as possible
		VCSIS.5-6.4.2.	Suggest improvements to the methods used to investigate a question or solve a problem (VCSIS087)
		VCSIS.5-6.4.2.1.	Working collaboratively to identify where testing was not fair and suggesting how fairness could be improved
Electric Circuits	L5/6	**VCSSU.5-6.1.1.**	Scientific understandings, discoveries and inventions are used to inform personal and community decisions and to solve problems that directly affect people's lives (VCSSU073)
		VCSIS.5-6.1.1.	With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be based on previous experiences or general rules (VCSIS082)
		VCSIS.5-6.1.1.1.	Exploring a range of questions that can be asked about a problem or phenomena and, with guidance, identifying those questions that could be investigated by students
		VCSIS.5-6.1.1.2.	Refining questions to enable scientific investigation
		VCSIS.5-6.2.1.	With guidance, plan appropriate investigation types to answer questions or solve problems and use equipment, technologies and materials safely, identifying potential risks (VCSIS083)
		VCSIS.5-6.2.1.1.	Following a given procedure to design an experimental or field investigation
		VCSIS.5-6.2.1.4.	Discussing possible hazards involved in conducting investigations, and how these risks can be reduced
		VCSIS.5-6.2.2.3.	Using digital technologies to make accurate measurements and record data
		VCSSU.5-6.5.2.1.	Recognising the need for a complete circuit to allow the flow of electricity

		VCSSU.5-6.5.2.2.	Exploring circuit features, for example, wires and switches, and electrical devices, for example, light globes, LEDs and motors
		VCSSU.5-6.5.2.3.	Investigating different electrical conductors and insulators
		VCSSU.5-6.5.2.4.	Investigating how moving air and water can turn turbines to generate electricity
		VCSSU.5-6.5.2.5.	Investigating how solar panels can generate electricity
		VCSSU.5-6.1.1.2.	Considering how electricity and electrical appliances have changed the way some people live
		VCSSU.5-6.1.1.4.	Considering how guidelines help to ensure the safe use of electrical devices
		VCSSU.5-6.1.1.5.	Comparing the benefits of using solid, liquid or gaseous fuels to heat a home
Chemical Processes	L5/6	**VCSSU.5-6.3.2.**	Changes to materials can be reversible, including melting, freezing, evaporating, or irreversible, including burning and rusting (VCSSU077)
		VCSSU.5-6.3.2.2.	Investigating irreversible changes, for example, rusting, burning and cooking
		VCSSU.5-6.3.2.3.	Exploring how reversible changes can be used to recycle materials
		VCSSU.5-6.1.1.	Scientific understandings, discoveries and inventions are used to inform personal and community decisions and to solve problems that directly affect people's lives (VCSSU073)
		VCSIS.5-6.1.1.2.	Refining questions to enable scientific investigation
		VCSIS.5-6.1.1.3.	Applying experience from previous investigations to predict the outcomes of investigations in new contexts
		VCSIS.5-6.2.1.	With guidance, plan appropriate investigation types to answer questions or solve problems and use equipment, technologies and materials safely, identifying potential risks (VCSIS083)
		VCSIS.5-6.2.1.1.	Following a given procedure to design an experimental or field investigation
		VCSIS.5-6.2.1.4.	Discussing possible hazards involved in conducting investigations, and how these risks can be reduced
		VCSIS.5-6.4.1.3.	Sharing ideas as to whether observations match predictions, and discussing possible reasons for predictions being incorrect
Natural Processes	L5/6	**VCSSU.5-6.4.2.**	Sudden geological changes or extreme weather conditions can affect Earth's surface (VCSSU079)
		VCSSU.5-6.4.2.1.	Investigating major geological events, for example, earthquakes, volcanic eruptions and tsunamis

		VCSSU.5-6.4.2.2.	Recognising that earthquakes can cause tsunamis
		VCSSU.5-6.4.2.3.	Considering the effect of drought on living and non-living aspects of the environment
		VCSSU.5-6.1.1.	Scientific understandings, discoveries and inventions are used to inform personal and community decisions and to solve problems that directly affect people's lives (VCSSU073)
		VCSIS.5-6.1.1.	With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be based on previous experiences or general rules (VCSIS082)
		VCSIS.5-6.1.1.1.	Exploring a range of questions that can be asked about a problem or phenomena and, with guidance, identifying those questions that could be investigated by students
		VCSIS.5-6.2.1.2.	Experiencing a range of ways of investigating questions, including experimental testing, creating models, internet research, field observations, simulations and trial and error methods
		VCSIS.5-6.2.1.3.	Discussing the advantages and disadvantages of certain types of investigation for answering certain types of questions
		VCSIS.5-6.2.2.2.	Using tools and digital technologies to accurately measure objects and events in investigation and exploring which tools provide the most accurate measurements
		VCSIS.5-6.4.2.2.	Identifying improvements to investigation methods, and discussing how these improvements would affect the quality of the data obtained
		VCSIS.5-6.5.1.	Communicate ideas and processes using evidence to develop explanations of events and phenomena and to identify simple cause-and-effect relationships (VCSIS088)
Light Reflection	L5/6	**VCSSU.5-6.5.1.**	Light from a source forms shadows and can be absorbed, reflected and refracted (VCSSU080)
		VCSSU.5-6.5.1.2.	Exploring the use of mirrors to demonstrate the reflection of light
		VCSSU.5-6.5.1.3.	Recognising the refraction of light at the surfaces of different transparent materials, for example, when light travels from air to water or air to glass
		VCSSU.5-6.1.1.1.	Exploring objects and devices that include parts that involve the reflection, absorption or refraction of light, for example, mirrors, sunglasses and prisms

		VCSIS.5-6.1.1.	With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be based on previous experiences or general rules (VCSIS082)
		VCSIS.5-6.1.1.1.	Exploring a range of questions that can be asked about a problem or phenomena and, with guidance, identifying those questions that could be investigated by students
		VCSIS.5-6.1.1.2.	Refining questions to enable scientific investigation
		VCSIS.5-6.2.1.	With guidance, plan appropriate investigation types to answer questions or solve problems and use equipment, technologies and materials safely, identifying potential risks (VCSIS083)
		VCSIS.5-6.2.1.1.	Following a given procedure to design an experimental or field investigation
		VCSIS.5-6.4.1.2.	Referring to evidence when explaining the outcomes of an investigation
The Solar System	L5/6	**VCSSU.5-6.4.1.**	Earth is part of a system of planets orbiting around a star (the Sun) (VCSSU078)
		VCSSU.5-6.4.1.1.	Identifying the planets of the solar system and comparing how long they take to orbit the Sun
		VCSSU.5-6.4.1.2.	Modelling the relative size of and distance between Earth, other planets in the solar system and the sun
		VCSIS.5-6.2.1.2.	Experiencing a range of ways of investigating questions, including experimental testing, creating models, internet research, field observations, simulations and trial and error methods
		VCSIS.5-6.2.1.3.	Discussing the advantages and disadvantages of certain types of investigation for answering certain types of questions
		VCSIS.5-6.2.2.2.	Using tools and digital technologies to accurately measure objects and events in investigation and exploring which tools provide the most accurate measurements
		VCSIS.5-6.3.1.	Construct and use a range of representations, including tables and graphs, to record, represent and describe observations, patterns or relationships in data (VCSIS085)
		VCSIS.5-6.3.1.1.	Using familiar units such as grams, seconds and metres and developing the use of standard multipliers such as kilometres and millimetres
		VCSIS.5-6.3.1.3.	Using digital technologies to construct representations, including dynamic representations

		VCSIS.5-6.4.1.3.	Sharing ideas as to whether observations match predictions, and discussing possible reasons for predictions being incorrect
		VCSIS.5-6.5.1.1.	Discussing how models represent scientific ideas and constructing physical models to demonstrate an aspect of scientific understanding
Properties of Visible Light	L5/6	**VCSSU.5-6.5.1.**	Light from a source forms shadows and can be absorbed, reflected and refracted (VCSSU080)
		VCSSU.5-6.5.1.1.	Classifying materials as transparent, opaque or translucent based on the extent to which light passes through them or is absorbed
		VCSSU.5-6.5.1.4.	Recognising that the colour of an object depends on the properties of the object and the colour of the light source
		VCSSU.5-6.1.1.	Scientific understandings, discoveries and inventions are used to inform personal and community decisions and to solve problems that directly affect people's lives (VCSSU073)
		VCSSU.5-6.1.1.1.	Exploring objects and devices that include parts that involve the reflection, absorption or refraction of light, for example, mirrors, sunglasses and prisms
		VCSIS.5-6.2.2.	Decide which variables should be changed, measured and controlled in fair tests and accurately observe, measure and record data (VCSIS084)
		VCSIS.5-6.2.2.1.	Discussing in groups how investigations can be made as fair as possible
		VCSIS.5-6.4.1.	Compare data with predictions and use as evidence in developing explanations (VCSIS086)
Growth of Plants	L5/6	**VCSSU.5-6.2.2.**	The growth and survival of living things are affected by the physical conditions of their environment (VCSSU075)
		VCSSU.5-6.2.2.1.	Observing the growth of fungi, for example, yeast and bread mould in different temperature conditions
		VCSSU.5-6.2.2.2.	Investigating how changing the physical conditions for plants impacts on their growth and survival, for example, changing salt water concentrations, using fertilisers or transferring to a different soil type
		VCSSU.5-6.1.1.	Scientific understandings, discoveries and inventions are used to inform personal and community decisions and to solve problems that directly affect people's lives (VCSSU073)
		VCSSU.5-6.1.1.3.	Considering how decisions are made to grow particular plants and crops depending on environmental conditions

		VCSIS.5-6.1.1.	With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be based on previous experiences or general rules (VCSIS082)
		VCSIS.5-6.1.1.1.	Exploring a range of questions that can be asked about a problem or phenomena and, with guidance, identifying those questions that could be investigated by students
		VCSIS.5-6.1.1.2.	Refining questions to enable scientific investigation
		VCSIS.5-6.1.1.3.	Applying experience from previous investigations to predict the outcomes of investigations in new contexts
		VCSIS.5-6.2.2.2.	Using tools and digital technologies to accurately measure objects and events in investigation and exploring which tools provide the most accurate measurements
		VCSIS.5-6.3.1.	Construct and use a range of representations, including tables and graphs, to record, represent and describe observations, patterns or relationships in data (VCSIS085)
		VCSIS.5-6.3.1.1.	Using familiar units such as grams, seconds and metres and developing the use of standard multipliers such as kilometres and millimetres
		VCSIS.5-6.3.1.2.	Using digital technologies to record data as digital images or in spreadsheets and to present data in tables and simple graphs
		VCSIS.5-6.4.2.	Suggest improvements to the methods used to investigate a question or solve a problem (VCSIS087)
		VCSIS.5-6.4.2.1.	Working collaboratively to identify where testing was not fair and suggesting how fairness could be improved

Module Name	Grade	Standard	Description
Classifying Rocks	L7/8	**VCSSU.7-8.4.4.**	Sedimentary, igneous and metamorphic rocks contain minerals and are formed by processes that occur within Earth over a variety of timescales (VCSSU102)
		VCSSU.7-8.4.4.1.	Recognising that rocks are a collection of different minerals
		VCSSU.7-8.4.4.2.	Considering the role of forces and energy in the formation of different types of rocks and minerals
		VCSSU.7-8.4.4.3.	Identifying a range of common rock types using keys based on observable physical and chemical properties
		VCSIS.7-8.1.1.1.	Considering whether an investigation using available resources is possible when identifying questions or problems to investigate
		VCSIS.7-8.1.1.2.	Using information and knowledge from their own investigations and secondary sources to predict the expected results from an investigation
		VCSIS.7-8.2.1.1.	Identifying whether the use of their own observations and experiments or the use of other research materials is appropriate for their investigation
		VCSIS.7-8.2.2.	In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task (VCSIS109)
		VCSIS.7-8.2.2.1.	Taking into consideration all aspects of fair testing, available equipment, safe investigation and ethical considerations when planning investigations
		VCSIS.7-8.2.2.2.	Identifying and explaining the differences between controlled, dependent and independent variables
		VCSIS.7-8.2.2.3.	Using specialised equipment to increase the accuracy of measurement within an investigation
		VCSIS.7-8.4.2.2.	Discussing investigation methods with others to share ideas about the quality of the inquiry processes used
		VCSIS.7-8.5.1.2.	Selecting and using appropriate language and representations to communicate science ideas within a specified text type and for a specified audience
Simple Machines	L7/8	**VCSSU.7-8.5.1.**	Change to an object's motion is caused by unbalanced forces acting on the object; Earth's gravity pulls objects towards the centre of Earth (VCSSU103)
		VCSSU.7-8.5.1.3.	Investigating a simple machine such as a lever or a pulley system

		VCSIS.7-8.1.1.2.	Using information and knowledge from their own investigations and secondary sources to predict the expected results from an investigation
		VCSIS.7-8.4.2.	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 (VCSIS112)
		VCSIS.7-8.4.2.1.	Identifying and considering indicators of the quality of the data when analysing results
		VCSIS.7-8.4.2.2.	Discussing investigation methods with others to share ideas about the quality of the inquiry processes used
Pure Substances And Mixtures	L7/8	**VCSSU.7-8.3.1.**	Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques (VCSSU095)
		VCSSU.7-8.3.1.1.	Recognising the differences between pure substances and mixtures and identifying examples of each
		VCSSU.7-8.3.1.2.	Identifying the solvent and solute in solutions
		VCSIS.7-8.1.1.1.	Considering whether an investigation using available resources is possible when identifying questions or problems to investigate
		VCSIS.7-8.2.1.3.	Developing strategies and techniques for effective research using secondary sources, including use of the internet
Sound	L7/8	**VCSSU.7-8.5.4.**	The properties of sound can be explained by a wave model (VCSSU106)
		VCSSU.7-8.5.4.1.	Describing how sounds are produced by different musical instruments
		VCSSU.7-8.5.4.2.	Measuring the speed of sound
		VCSIS.7-8.1.1.2.	Using information and knowledge from their own investigations and secondary sources to predict the expected results from an investigation
		VCSIS.7-8.2.1.1.	Identifying whether the use of their own observations and experiments or the use of other research materials is appropriate for their investigation
		VCSIS.7-8.2.1.3.	Developing strategies and techniques for effective research using secondary sources, including use of the internet
		VCSIS.7-8.3.1.2.	Comparing and contrasting data from a number of sources in order to create a summary of collected data
		VCSIS.7-8.4.1.2.	Drawing conclusions based on a range of evidence including from primary and secondary sources

		VCSIS.7-8.4.2.	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 (VCSIS112)
		VCSIS.7-8.4.2.1.	Identifying and considering indicators of the quality of the data when analysing results
		VCSIS.7-8.4.2.3.	Suggesting improvements to investigation methods that would improve the accuracy of the data recorded
Wavelength and Amplitude	L7/8	**VCSSU.7-8.5.4.**	The properties of sound can be explained by a wave model (VCSSU106)
		VCSSU.7-8.5.4.1.	Describing how sounds are produced by different musical instruments
		VCSSU.7-8.5.4.2.	Measuring the speed of sound
		VCSSU.7-8.5.4.3.	Using a wave model to describe the measured properties of sound, wavelength and frequency
		VCSIS.7-8.1.1.2.	Using information and knowledge from their own investigations and secondary sources to predict the expected results from an investigation
		VCSIS.7-8.2.1.1.	Identifying whether the use of their own observations and experiments or the use of other research materials is appropriate for their investigation
		VCSIS.7-8.2.1.3.	Developing strategies and techniques for effective research using secondary sources, including use of the internet
		VCSIS.7-8.3.1.2.	Comparing and contrasting data from a number of sources in order to create a summary of collected data
		VCSIS.7-8.4.1.2.	Drawing conclusions based on a range of evidence including from primary and secondary sources
		VCSSU.7-8.5.3.1.	Exploring how images can change when the arrangement of the mirror or lens system is altered
		VCSSU.7-8.5.3.2.	Exploring the mechanism of the human eye and corrective technologies
		VCSSU.7-8.5.3.3.	Observing the spread and order of colours in the visible spectrum
		VCSSU.7-8.5.3.4.	Describing the different types of radiation in the larger spectrum of radiation
Renewable and Non-Renewable Resources	L7/8	**VCSSU.7-8.4.2.**	Some of Earth's resources are renewable, but others are non-renewable (VCSSU100)
		VCSSU.7-8.4.2.1.	Considering what is meant by the term 'renewable' in relation to the Earth's resources

		VCSSU.7-8.4.2.2.	Considering timescales for regeneration of resources
		VCSSU.7-8.1.1.	Scientific knowledge and understanding of the world changes as new evidence becomes available; science knowledge can develop through collaboration and connecting ideas across the disciplines and practice of science (VCSSU089)
		VCSSU.7-8.1.1.3.	Investigating how knowledge of the location and extraction of mineral resources relies on expertise from across the disciplines of science
		VCSSU.7-8.1.1.5.	Investigating how land management practices of Aboriginal and Torres Strait Islander peoples can help inform sustainable management of the environment
		VCSSU.7-8.1.2.	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 (VCSSU090)
		VCSSU.7-8.1.2.3.	Investigating the development of vehicles over time, including the application of science and technology to the designs of solar-powered or electric vehicles
		VCSIS.7-8.1.1.3.	Recognising that the solution of some questions and problems may require consideration of social, cultural, economic or moral factors in addition to results from scientific investigation
Mixtures	L7/8	**VCSSU.7-8.3.1.**	Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques (VCSSU095)
		VCSSU.7-8.3.1.3.	Investigating and using a range of physical separation techniques such as filtration, decantation, evaporation, crystallisation, chromatography and distillation
		VCSSU.7-8.3.1.4.	Exploring and comparing separation methods used in the home
		VCSIS.7-8.1.1.	Identify questions, problems and claims that can be investigated scientifically and make predictions based on scientific knowledge (VCSIS107)
		VCSIS.7-8.1.1.1.	Considering whether an investigation using available resources is possible when identifying questions or problems to investigate
		VCSIS.7-8.1.1.2.	Using information and knowledge from their own investigations and secondary sources to predict the expected results from an investigation

		VCSIS.7-8.2.1.	Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (VCSIS108)
		VCSIS.7-8.2.2.	In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task (VCSIS109)
		VCSIS.7-8.2.2.1.	Taking into consideration all aspects of fair testing, available equipment, safe investigation and ethical considerations when planning investigations
		VCSIS.7-8.2.2.2.	Identifying and explaining the differences between controlled, dependent and independent variables
		VCSIS.7-8.2.2.3.	Using specialised equipment to increase the accuracy of measurement within an investigation
		VCSIS.7-8.4.1.1.	Identifying data that provides evidence to support or refute the hypothesis being tested
Rotation and Revolution	L7/8	**VCSSU.7-8.4.1.**	Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the Sun, Earth and the Moon (VCSSU099)
		VCSSU.7-8.4.1.3.	Explaining why different regions of Earth experience different seasonal conditions
		VCSIS.7-8.1.1.1.	Considering whether an investigation using available resources is possible when identifying questions or problems to investigate
		VCSIS.7-8.2.1.2.	Using simulations and identifying their strengths and limitations
		VCSIS.7-8.2.1.3.	Developing strategies and techniques for effective research using secondary sources, including use of the internet
		VCSIS.7-8.3.1.	Construct and use a range of representations including graphs, keys and models to record and summarise data from students' own investigations and secondary sources, and to represent and analyse patterns and relationships (VCSIS110)
		VCSIS.7-8.3.1.1.	Understanding different types of diagrammatic, graphical and physical representations and considering their strengths and limitations
		VCSIS.7-8.4.1.2.	Drawing conclusions based on a range of evidence including from primary and secondary sources
Chemical Properties and Interactions	L7/8	**VCSSU.7-8.3.4.**	Chemical change involves substances reacting to form new substances (VCSSU098)
		VCSSU.7-8.3.4.1.	Identifying the differences between chemical and physical changes

		VCSSU.7-8.3.4.2.	Identifying evidence that a chemical change has taken place
		VCSSU.7-8.3.4.3.	Investigating simple reactions, for example, combining elements to make a compound
		VCSIS.7-8.1.1.1.	Considering whether an investigation using available resources is possible when identifying questions or problems to investigate
		VCSIS.7-8.1.1.2.	Using information and knowledge from their own investigations and secondary sources to predict the expected results from an investigation
		VCSIS.7-8.1.1.3.	Recognising that the solution of some questions and problems may require consideration of social, cultural, economic or moral factors in addition to results from scientific investigation
		VCSIS.7-8.2.1.	Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (VCSIS108)
		VCSIS.7-8.3.1.2.	Comparing and contrasting data from a number of sources in order to create a summary of collected data
		VCSIS.7-8.4.1.1.	Identifying data that provides evidence to support or refute the hypothesis being tested
		VCSIS.7-8.4.2.2.	Discussing investigation methods with others to share ideas about the quality of the inquiry processes used
		VCSIS.7-8.4.2.3.	Suggesting improvements to investigation methods that would improve the accuracy of the data recorded
Balanced and Unbalanced Forces	L7/8	**VCSSU.7-8.5.1.**	Change to an object's motion is caused by unbalanced forces acting on the object; Earth's gravity pulls objects towards the centre of Earth (VCSSU103)
		VCSSU.7-8.5.1.1.	Investigating the effects of applying different forces to familiar objects
		VCSSU.7-8.5.1.2.	Investigating common situations where forces are balanced and unbalanced, for example, stationary and falling objects
		VCSIS.7-8.1.1.	Identify questions, problems and claims that can be investigated scientifically and make predictions based on scientific knowledge (VCSIS107)
		VCSIS.7-8.1.1.2.	Using information and knowledge from their own investigations and secondary sources to predict the expected results from an investigation

		VCSIS.7-8.2.1.	Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (VCSIS108)
		VCSIS.7-8.4.2.2.	Discussing investigation methods with others to share ideas about the quality of the inquiry processes used
Kinetic Energy	L7/8	**VCSSU.7-8.5.2.**	Energy appears in different forms including movement (kinetic energy), heat, light, chemical energy and potential energy; devices can change energy from one form to another (VCSSU104)
		VCSSU.7-8.5.2.1.	Recognising that kinetic energy is the energy possessed by moving bodies
		VCSSU.7-8.1.2.	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 (VCSSU090)
		VCSSU.7-8.1.2.4.	Relating regulations about wearing seatbelts or safety helmets to knowledge of forces and motion
		VCSIS.7-8.2.1.	Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (VCSIS108)
		VCSIS.7-8.4.1.2.	Drawing conclusions based on a range of evidence including from primary and secondary sources
		VCSIS.7-8.5.1.2.	Selecting and using appropriate language and representations to communicate science ideas within a specified text type and for a specified audience
Potential Energy	L7/8	**VCSSU.7-8.5.2.**	Energy appears in different forms including movement (kinetic energy), heat, light, chemical energy and potential energy; devices can change energy from one form to another (VCSSU104)
		VCSSU.7-8.5.2.2.	Recognising that potential energy is stored energy, for example, gravitational, chemical and elastic energy
		VCSIS.7-8.2.1.3.	Developing strategies and techniques for effective research using secondary sources, including use of the internet
		VCSIS.7-8.4.1.2.	Drawing conclusions based on a range of evidence including from primary and secondary sources
		VCSIS.7-8.5.1.2.	Selecting and using appropriate language and representations to communicate science ideas within a specified text type and for a specified audience

Gravity	L7/8	**VCSSU.7-8.5.1.**	Change to an object's motion is caused by unbalanced forces acting on the object; Earth's gravity pulls objects towards the centre of Earth (VCSSU103)
		VCSSU.7-8.5.1.4.	Exploring how gravity affects objects on the surface of Earth
		VCSIS.7-8.1.1.1.	Considering whether an investigation using available resources is possible when identifying questions or problems to investigate
		VCSIS.7-8.2.1.1.	Identifying whether the use of their own observations and experiments or the use of other research materials is appropriate for their investigation
		VCSIS.7-8.3.1.2.	Comparing and contrasting data from a number of sources in order to create a summary of collected data
		VCSIS.7-8.4.2.2.	Discussing investigation methods with others to share ideas about the quality of the inquiry processes used
Anatomy of a Cell	L7/8	**VCSSU.7-8.2.2.**	Cells are the basic units of living things and have specialised structures and functions (VCSSU092)
		VCSSU.7-8.2.2.3.	Identifying structures within cells and describing their function
		VCSSU.7-8.2.2.4.	Recognising that some organisms consist of a single cell
		VCSIS.7-8.2.1.2.	Using simulations and identifying their strengths and limitations
		VCSIS.7-8.2.1.3.	Developing strategies and techniques for effective research using secondary sources, including use of the internet
		VCSIS.7-8.3.1.	Construct and use a range of representations including graphs, keys and models to record and summarise data from students' own investigations and secondary sources, and to represent and analyse patterns and relationships (VCSIS110)
		VCSIS.7-8.3.1.1.	Understanding different types of diagrammatic, graphical and physical representations and considering their strengths and limitations
		VCSIS.7-8.3.1.3.	Using diagrammatic representations to convey abstract ideas and to simplify complex situations
		VCSSU.7-8.2.2.1.	Examining a variety of cells using a light microscope, by digital technology or by viewing a simulation
		VCSSU.7-8.2.2.2.	Distinguishing plant cells from animal and fungal cells

Classification of Organisms	L7/8	**VCSSU.7-8.2.1.**	There are differences within and between groups of organisms; classification helps organise this diversity (VCSSU091)
		VCSSU.7-8.2.1.1.	Grouping a variety of organisms on the basis of similarities and differences in particular features
		VCSSU.7-8.2.1.2.	Classifying using hierarchical systems, for example, kingdom, phylum, class, order, family, genus, species
		VCSSU.7-8.2.1.3.	Using scientific conventions for naming species
		VCSSU.7-8.2.1.4.	Using provided keys to identify organisms surveyed in a local habitat
		VCSIS.7-8.2.1.	Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (VCSIS108)
		VCSIS.7-8.2.1.3.	Developing strategies and techniques for effective research using secondary sources, including use of the internet
		VCSIS.7-8.3.1.	Construct and use a range of representations including graphs, keys and models to record and summarise data from students' own investigations and secondary sources, and to represent and analyse patterns and relationships (VCSIS110)
		VCSIS.7-8.4.1.	Use scientific knowledge and findings from investigations to identify relationships, evaluate claims and draw conclusions (VCSIS111)
		VCSIS.7-8.4.1.1.	Identifying data that provides evidence to support or refute the hypothesis being tested
		VCSIS.7-8.5.1.	Communicate ideas, findings and solutions to problems including identifying impacts and limitations of conclusions and using appropriate scientific language and representations (VCSIS113)
		VCSSU.7-8.2.3.1.	Constructing and interpreting food chains and food webs to show relationships between organisms in an environment
		VCSSU.7-8.2.3.2.	Recognising the role of microorganisms within food chains and food webs
		VCSSU.7-8.2.3.3.	Researching examples of human impacts on specific ecosystems, for example, the use of fire by traditional Aboriginal people, the effects of palm oil harvesting, deforestation, agricultural practices or the introduction of new species
Elements and Compounds	L7/8	**VCSSU.7-8.3.3.**	Differences between elements, compounds and mixtures can be described by using a particle model (VCSSU097)

		VCSSU.7-8.3.3.1.	Modelling the arrangement of particles in elements and compounds
		VCSSU.7-8.3.3.2.	Recognising that elements and simple compounds can be represented by symbols and formulas
		VCSSU.7-8.3.3.3.	Explaining why elements and compounds can be represented by chemical formulas while mixtures cannot
		VCSIS.7-8.1.1.1.	Considering whether an investigation using available resources is possible when identifying questions or problems to investigate
		VCSIS.7-8.1.1.2.	Using information and knowledge from their own investigations and secondary sources to predict the expected results from an investigation
		VCSIS.7-8.2.1.1.	Identifying whether the use of their own observations and experiments or the use of other research materials is appropriate for their investigation
		VCSIS.7-8.3.1.	Construct and use a range of representations including graphs, keys and models to record and summarise data from students' own investigations and secondary sources, and to represent and analyse patterns and relationships (VCSIS110)
		VCSIS.7-8.5.1.1.	Using digital technologies to access information, to communicate and collaborate with others on and off site and to present science ideas
		VCSIS.7-8.5.1.2.	Selecting and using appropriate language and representations to communicate science ideas within a specified text type and for a specified audience
Bodies and Systems	L7/8	**VCSSU.7-8.2.4.**	Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce (VCSSU094)
		VCSSU.7-8.2.4.1.	Examining the specialised cells and tissues involved in structure and function of particular organs
		VCSSU.7-8.2.4.2.	Describing the structure of each organ in a system and relating its function to the overall function of the system
		VCSSU.7-8.2.4.3.	Identifying the organs and overall function of a system of a multicellular organism in supporting life processes
		VCSSU.7-8.1.1.	Scientific knowledge and understanding of the world changes as new evidence becomes available; science knowledge can develop through collaboration and connecting ideas across the disciplines and practice of science (VCSSU089)

		VCSSU.7-8.1.1.2.	Investigating how the development of microscopes has changed understanding of cell function and malfunction, and how this has led to improved medical treatments for disease
		VCSSU.7-8.1.1.4.	Considering how advances in technology, combined with scientific understanding of the functioning of body systems, has enabled organ repair and replacement
		VCSSU.7-8.1.2.	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 (VCSSU090)
		VCSSU.7-8.1.2.5.	Discussing ethical issues that arise from organ transplantation
		VCSIS.7-8.1.1.3.	Recognising that the solution of some questions and problems may require consideration of social, cultural, economic or moral factors in addition to results from scientific investigation
		VCSIS.7-8.3.1.	Construct and use a range of representations including graphs, keys and models to record and summarise data from students' own investigations and secondary sources, and to represent and analyse patterns and relationships (VCSIS110)
		VCSIS.7-8.3.1.3.	Using diagrammatic representations to convey abstract ideas and to simplify complex situations
		VCSIS.7-8.5.1.1.	Using digital technologies to access information, to communicate and collaborate with others on and off site and to present science ideas
		VCSSU.7-8.2.4.5.	Comparing similar systems in different organisms, for example, digestive systems in herbivores and carnivores, respiratory systems in fish and mammals
Energy Transfer	L7/8	**VCSSU.7-8.5.2.**	Energy appears in different forms including movement (kinetic energy), heat, light, chemical energy and potential energy; devices can change energy from one form to another (VCSSU104)
		VCSSU.7-8.5.2.3.	Using flow diagrams to illustrate changes between different forms of energy
		VCSSU.7-8.5.2.4.	Investigating the energy transformations in devices, for example, a catapult or a water wheel
		VCSSU.7-8.1.2.	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 (VCSSU090)
		VCSSU.7-8.1.2.4.	Relating regulations about wearing seatbelts or safety helmets to knowledge of forces and motion

		VCSIS.7-8.1.1.	Identify questions, problems and claims that can be investigated scientifically and make predictions based on scientific knowledge (VCSIS107)
		VCSIS.7-8.1.1.2.	Using information and knowledge from their own investigations and secondary sources to predict the expected results from an investigation
		VCSIS.7-8.2.1.1.	Identifying whether the use of their own observations and experiments or the use of other research materials is appropriate for their investigation
		VCSIS.7-8.4.1.2.	Drawing conclusions based on a range of evidence including from primary and secondary sources
		VCSIS.7-8.4.2.3.	Suggesting improvements to investigation methods that would improve the accuracy of the data recorded
Earth, Sun, and Moon System	L7/8	**VCSSU.7-8.4.1.**	Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the Sun, Earth and the Moon (VCSSU099)
		VCSSU.7-8.4.1.1.	Comparing times for the rotation of Earth, Sun and Moon, and comparing the times for the orbits of Earth and the Moon
		VCSSU.7-8.4.1.2.	Modelling the relative movements of the Earth, Sun and Moon and how natural phenomena such as solar and lunar eclipses and phases of the Moon occur
		VCSSU.7-8.1.1.	Scientific knowledge and understanding of the world changes as new evidence becomes available; science knowledge can develop through collaboration and connecting ideas across the disciplines and practice of science (VCSSU089)
		VCSSU.7-8.1.1.1.	Investigating how advances in telescopes and space probes have provided new evidence about space
		VCSIS.7-8.2.1.2.	Using simulations and identifying their strengths and limitations
		VCSIS.7-8.2.1.3.	Developing strategies and techniques for effective research using secondary sources, including use of the internet
		VCSIS.7-8.3.1.	Construct and use a range of representations including graphs, keys and models to record and summarise data from students' own investigations and secondary sources, and to represent and analyse patterns and relationships (VCSIS110)
		VCSIS.7-8.3.1.1.	Understanding different types of diagrammatic, graphical and physical representations and considering their strengths and limitations

		VCSIS.7-8.4.1.2.	Drawing conclusions based on a range of evidence including from primary and secondary sources
Reproduction and Variation	L7/8	**VCSSU.7-8.2.4.**	Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce (VCSSU094)
		VCSSU.7-8.2.4.4.	Comparing reproductive systems of organisms
		VCSIS.7-8.1.1.3.	Recognising that the solution of some questions and problems may require consideration of social, cultural, economic or moral factors in addition to results from scientific investigation
		VCSIS.7-8.2.1.2.	Using simulations and identifying their strengths and limitations
		VCSIS.7-8.3.1.	Construct and use a range of representations including graphs, keys and models to record and summarise data from students' own investigations and secondary sources, and to represent and analyse patterns and relationships (VCSIS110)
		VCSIS.7-8.3.1.1.	Understanding different types of diagrammatic, graphical and physical representations and considering their strengths and limitations
		VCSIS.7-8.3.1.3.	Using diagrammatic representations to convey abstract ideas and to simplify complex situations
		VCSIS.7-8.5.1.1.	Using digital technologies to access information, to communicate and collaborate with others on and off site and to present science ideas
The Water Cycle	L7/8	**VCSSU.7-8.4.3.**	Water is an important resource that cycles through the environment (VCSSU101)
		VCSSU.7-8.4.3.1.	Considering the water cycle in terms of changes of state of water
		VCSSU.7-8.4.3.2.	Investigating factors that influence the water cycle in nature
		VCSSU.7-8.4.3.3.	Exploring how human management of water impacts on the water cycle
		VCSIS.7-8.1.1.	Identify questions, problems and claims that can be investigated scientifically and make predictions based on scientific knowledge (VCSIS107)
		VCSIS.7-8.1.1.2.	Using information and knowledge from their own investigations and secondary sources to predict the expected results from an investigation
		VCSIS.7-8.2.1.1.	Identifying whether the use of their own observations and experiments or the use of other research materials is appropriate for their investigation
		VCSIS.7-8.2.1.2.	Using simulations and identifying their strengths and limitations

		VCSIS.7-8.3.1.	Construct and use a range of representations including graphs, keys and models to record and summarise data from students' own investigations and secondary sources, and to represent and analyse patterns and relationships (VCSIS110)
		VCSIS.7-8.4.1.1.	Identifying data that provides evidence to support or refute the hypothesis being tested
		VCSSU.7-8.3.2.1.	Modelling the arrangement of particles in solids, liquids and gases
		VCSSU.7-8.3.2.2.	Using the particle model to distinguish between the properties of liquid water, ice and steam
		VCSSU.7-8.1.2.1.	Considering decisions made in relation to the recycling of greywater and blackwater
		VCSSU.7-8.1.2.2.	Investigating strategies implemented to maintain part of the local environment, such as bushland, a beach, a lake, a desert or a shoreline

Module Name	Grade	Standard	Description
Chemical Reactions	L9/10	**VCSSU.9-10.3.3.**	Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction mass is not created or destroyed (VCSSU124)
		VCSSU.9-10.3.3.1.	Modelling chemical reactions in terms of rearrangement of atoms
		VCSSU.9-10.3.3.2.	Considering the role of energy in chemical reactions
		VCSIS.9-10.1.1.1.	Formulating questions that can be investigated within the scope of the classroom or field with available resources
		VCSIS.9-10.3.1.	Construct and use a range of representations, including graphs, keys, models and formulas, to record and summarise data from students' own investigations and secondary sources, to represent qualitative and quantitative patterns or relationships, and distinguish between discrete and continuous data (VCSIS137)
		VCSIS.9-10.3.1.1.	Using spreadsheets to present data in tables and graphical forms and to carry out mathematical analyses of data
		VCSIS.9-10.5.1.2.	Using a range of representations, including mathematical and symbolic forms, to communicate science ideas
Acids and Bases	L9/10	**VCSSU.9-10.3.5.**	Chemical reactions, including combustion and the reactions of acids, are important in both non-living and living systems and involve energy transfer (VCSSU126)
		VCSSU.9-10.3.5.3.	Investigating reactions of acids with metals, bases, and carbonates
		VCSIS.9-10.1.1.	Formulate questions or hypotheses that can be investigated scientifically, including identification of independent, dependent and controlled variables (VCSIS134)
		VCSIS.9-10.1.1.1.	Formulating questions that can be investigated within the scope of the classroom or field with available resources
		VCSIS.9-10.2.1.1.	Explaining the choice of variables to be controlled, changed and measured in an investigation
		VCSIS.9-10.2.1.2.	Identifying and managing potential hazards of chemicals or biological materials used in experimental investigations or fieldwork
		VCSIS.9-10.2.2.1.	Applying specific skills in the use of scientific instruments

Transfer of Heat and Electricity	L9/10	**VCSSU.9-10.5.1.1.**	Investigating parallel and series circuits and measuring voltage drops across and currents through various components
		VCSSU.9-10.5.1.2.	Investigating the properties of components such as LEDs, and temperature and light sensors
		VCSSU.9-10.5.1.3.	Comparing circuit design to household wiring
		VCSSU.9-10.5.1.4.	Exploring the use of sensors in robotics and control devices
		VCSSU.9-10.1.2.1.	Considering how the properties of electromagnetic radiation relate to its uses, for example, radar, medical diagnosis and treatment, mobile phone communications and microwave cooking
		VCSSU.9-10.5.2.1.	Investigating the action at a distance or the field model around magnets of different shapes
		VCSSU.9-10.5.2.2.	Investigating the movement of a magnet and a wire to produce electricity
		VCSSU.9-10.5.2.3.	Investigating the effect of a magnet on a current from a battery to produce movement
Energy Transfer in Motion	L9/10	**VCSSU.9-10.5.3.**	Energy flow in Earth's atmosphere can be explained by the processes of heat transfer (VCSSU132)
		VCSSU.9-10.5.3.1.	Recognising that the Law of Conservation of Energy explains that total energy is maintained in energy transfers and transformations
		VCSSU.9-10.5.3.2.	Recognising that in energy transfers and transformations, a number of steps can occur and the system is not 100% efficient so that usable energy is reduced
		VCSSU.9-10.5.3.3.	Comparing energy changes in physical events, for example, car crashes, the motion of pendulums, lifting and dropping
		VCSSU.9-10.1.3.	The values and needs of contemporary society can influence the focus of scientific research (VCSSU116)
		VCSIS.9-10.1.1.1.	Formulating questions that can be investigated within the scope of the classroom or field with available resources
		VCSIS.9-10.1.1.3.	Revising and refining research questions to target specific information and data collection or finding a solution to the specific problem identified
		VCSIS.9-10.2.2.	Select and use appropriate equipment and technologies to systematically collect and record accurate and reliable data, and use repeat trials to improve accuracy, precision and reliability (VCSIS136)

		VCSIS.9-10.2.2.2.	Selecting and using probes and data loggers to record information
		VCSIS.9-10.5.1.1.	Using secondary sources as well as students' own findings to help explain a scientific concept
Newton's Third Law of Motion	L9/10	**VCSSU.9-10.5.4.**	The description and explanation of the motion of objects involves the interaction of forces and the exchange of energy and can be described and predicted using the laws of physics (VCSSU133)
		VCSSU.9-10.5.4.1.	Tecognising that a stationary object, or a moving object with constant motion, has balanced forces acting on it
		VCSIS.9-10.1.1.2.	Developing ideas from students' own or others' investigations and experiences to investigate further
		VCSIS.9-10.2.2.2.	Selecting and using probes and data loggers to record information
		VCSIS.9-10.4.1.2.	Describing data properties (for example mean, median, range, outliers, large gaps visible on a graph) and their significance for a particular investigation sample, acknowledging uncertainties
		VCSIS.9-10.5.1.1.	Using secondary sources as well as students' own findings to help explain a scientific concept
Matter and Energy in Food Webs	L9/10	**VCSSU.9-10.2.5.**	Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems (VCSSU121)
		VCSSU.9-10.2.5.1.	Exploring interactions between organisms, for example, predator/prey, parasites, competitors, pollinators and disease vectors
		VCSIS.9-10.2.1.4.	Using modelling and simulations, including using digital technologies, to investigate situations and events
		VCSIS.9-10.2.2.2.	Selecting and using probes and data loggers to record information
		VCSIS.9-10.3.1.	Construct and use a range of representations, including graphs, keys, models and formulas, to record and summarise data from students' own investigations and secondary sources, to represent qualitative and quantitative patterns or relationships, and distinguish between discrete and continuous data (VCSIS137)
		VCSIS.9-10.5.1.3.	Presenting results and ideas using formal experimental reports, oral presentations, multimodal presentations, poster presentations and contributing to group discussions

Inheritance	L9/10	**VCSSU.9-10.2.3.**	The transmission of heritable characteristics from one generation to the next involves DNA and genes (VCSSU119)
		VCSSU.9-10.2.3.4.	Representing patterns of inheritance of a simple dominant/recessive characteristic through generations of a family
		VCSSU.9-10.1.3.3.	Considering the use of genetic testing for decisions such as genetic counselling, embryo selection, identification of carriers of genetic mutations and the use of this information for personal use or by organisation such as insurance companies or medical facilities
		VCSIS.9-10.2.1.4.	Using modelling and simulations, including using digital technologies, to investigate situations and events
		VCSIS.9-10.2.2.2.	Selecting and using probes and data loggers to record information
		VCSIS.9-10.3.1.	Construct and use a range of representations, including graphs, keys, models and formulas, to record and summarise data from students' own investigations and secondary sources, to represent qualitative and quantitative patterns or relationships, and distinguish between discrete and continuous data (VCSIS137)
		VCSIS.9-10.4.1.2.	Describing data properties (for example mean, median, range, outliers, large gaps visible on a graph) and their significance for a particular investigation sample, acknowledging uncertainties
		VCSSU.9-10.2.1.1.	Describing how the requirements for life (oxygen, nutrients, water and removal of waste) are provided through the coordinated function of body systems, for example, the respiratory, circulatory, digestive, nervous and excretory systems
		VCSSU.9-10.2.1.2.	Explaining (using models, flow diagrams or simulations) how body systems work together to maintain a functioning body
		VCSSU.9-10.2.1.3.	Investigating the response of the body to changes as a result of the presence of micro-organisms
		VCSSU.9-10.2.2.1.	Identifying functions for different areas of the brain
		VCSSU.9-10.2.2.2.	Modelling the 'knee jerk' reaction and explaining why it is a reflex action
		VCSSU.9-10.2.2.3.	Identifying responses involving the nervous and endocrine systems
		VCSSU.9-10.2.2.4.	Researching the causes and effects of spinal cord damage

Artificial Selection	L9/10	**VCSSU.9-10.2.4.**	The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence (VCSSU120)
		VCSSU.9-10.2.4.3.	Investigating changes caused by natural selection in a particular population as a result of a specified selection pressure, for example, artificial selection in breeding for desired characteristics
		VCSSU.9-10.1.3.	The values and needs of contemporary society can influence the focus of scientific research (VCSSU116)
		VCSSU.9-10.1.3.2.	Considering how choices related to the use of fuels are influenced by environmental, social and political considerations
		VCSSU.9-10.1.3.3.	Considering the use of genetic testing for decisions such as genetic counselling, embryo selection, identification of carriers of genetic mutations and the use of this information for personal use or by organisation such as insurance companies or medical facilities
		VCSIS.9-10.4.2.2.	Judging the validity of science-related media reports and how these reports might be interpreted by the public
		VCSIS.9-10.5.1.	Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations (VCSIS140)
Natural Selection and Populations	L9/10	**VCSSU.9-10.2.4.**	The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence (VCSSU120)
		VCSSU.9-10.2.4.1.	Describing biodiversity as a function of evolution
		VCSSU.9-10.2.4.2.	Outlining processes involved in natural selection including variation, isolation and selection
		VCSIS.9-10.2.2.2.	Selecting and using probes and data loggers to record information
		VCSIS.9-10.5.1.	Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations (VCSIS140)
Geologic History of Earth	L9/10	**VCSSU.9-10.2.4.**	The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence (VCSSU120)

		VCSSU.9-10.2.4.4.	Evaluating and interpreting evidence for evolution, including the fossil record, chemical and anatomical similarities, and the geographical distribution of species
		VCSIS.9-10.3.1.	Construct and use a range of representations, including graphs, keys, models and formulas, to record and summarise data from students' own investigations and secondary sources, to represent qualitative and quantitative patterns or relationships, and distinguish between discrete and continuous data (VCSIS137)
		VCSIS.9-10.4.2.	Use knowledge of scientific concepts to evaluate investigation conclusions, including assessing the approaches used to solve problems, critically analysing the validity of information obtained from primary and secondary sources, suggesting possible alternative explanations and describing specific ways to improve the quality of data (VCSIS139)
		VCSIS.9-10.5.1.1.	Using secondary sources as well as students' own findings to help explain a scientific concept
Seafloor Spreading	L9/10	**VCSSU.9-10.4.1.**	The theory of plate tectonics explains global patterns of geological activity and continental movement (VCSSU127)
		VCSSU.9-10.4.1.1.	Recognising the major plates on a world map
		VCSSU.9-10.4.1.2.	Considering the role of heat energy and convection currents in the movement of tectonic plates
		VCSSU.9-10.4.1.3.	Modelling sea-floor spreading
		VCSSU.9-10.4.1.4.	Relating the occurrence of earthquakes and volcanic activity to constructive and destructive plate boundaries
		VCSSU.9-10.4.1.5.	Relating the extreme age and stability of a large part of the Australian continent to its plate tectonic history
		VCSSU.9-10.1.1.3.	Investigating how the theory of plate tectonics developed, based on evidence from seafloor spreading and occurrence of earthquakes and volcanic activity
		VCSSU.9-10.1.2.3.	Considering how computer modelling and imaging technologies has improved knowledge and predictability of phenomena, for example, climate change, atmospheric pollution, plate tectonic movement, and body system functions and interactions

		VCSIS.9-10.2.2.	Select and use appropriate equipment and technologies to systematically collect and record accurate and reliable data, and use repeat trials to improve accuracy, precision and reliability (VCSIS136)
		VCSIS.9-10.4.2.	Use knowledge of scientific concepts to evaluate investigation conclusions, including assessing the approaches used to solve problems, critically analysing the validity of information obtained from primary and secondary sources, suggesting possible alternative explanations and describing specific ways to improve the quality of data (VCSIS139)
		VCSIS.9-10.4.2.4.	Suggesting more than one possible explanation of the data presented
Periodic Table and Trends	L9/10	**VCSSU.9-10.3.2.**	The atomic structure and properties of elements are used to organise them in the periodic table (VCSSU123)
		VCSSU.9-10.3.2.1.	Describing the structure of atoms in terms of electron shells
		VCSSU.9-10.3.2.2.	Explaining how the electronic structure of an atom determines its position in the periodic table and its properties
		VCSSU.9-10.3.2.3.	Investigating the chemical activity of metals
		VCSSU.9-10.1.1.	Scientific understanding, including models and theories, are contestable and are refined over time through a process of review by the scientific community (VCSSU114)
		VCSIS.9-10.3.1.	Construct and use a range of representations, including graphs, keys, models and formulas, to record and summarise data from students' own investigations and secondary sources, to represent qualitative and quantitative patterns or relationships, and distinguish between discrete and continuous data (VCSIS137)
		VCSIS.9-10.3.1.1.	Using spreadsheets to present data in tables and graphical forms and to carry out mathematical analyses of data
		VCSIS.9-10.3.1.2.	Designing and constructing appropriate graphs to represent data and to look for trends and patterns
		VCSIS.9-10.4.1.	Analyse patterns and trends in data, including describing relationships between variables, identifying inconsistencies in data and sources of uncertainty, and drawing conclusions that are consistent with evidence (VCSIS138)

Reaction Rates	L9/10	**VCSSU.9-10.3.4.**	Different types of chemical reactions are used to produce a range of products and can occur at different rates; chemical reactions may be represented by balanced chemical equations (VCSSU125)
		VCSSU.9-10.3.4.3.	Investigating the effect of a range of factors, for example, temperature and catalysts, on the rate of chemical reactions
		VCSIS.9-10.1.1.	Formulate questions or hypotheses that can be investigated scientifically, including identification of independent, dependent and controlled variables (VCSIS134)
		VCSIS.9-10.1.1.1.	Formulating questions that can be investigated within the scope of the classroom or field with available resources
		VCSIS.9-10.2.1.1.	Explaining the choice of variables to be controlled, changed and measured in an investigation
		VCSIS.9-10.2.1.2.	Identifying and managing potential hazards of chemicals or biological materials used in experimental investigations or fieldwork
Chemical Equilibrium	L9/10	**VCSSU.9-10.3.5.**	Chemical reactions, including combustion and the reactions of acids, are important in both non-living and living systems and involve energy transfer (VCSSU126)
		VCSSU.9-10.3.5.1.	Investigating a range of different reactions to classify them as exothermic or endothermic
		VCSIS.9-10.1.1.	Formulate questions or hypotheses that can be investigated scientifically, including identification of independent, dependent and controlled variables (VCSIS134)
		VCSIS.9-10.1.1.1.	Formulating questions that can be investigated within the scope of the classroom or field with available resources
		VCSIS.9-10.2.1.1.	Explaining the choice of variables to be controlled, changed and measured in an investigation
		VCSIS.9-10.2.1.2.	Identifying and managing potential hazards of chemicals or biological materials used in experimental investigations or fieldwork
		VCSIS.9-10.2.1.3.	Deciding how much data are needed to obtain reliable measurements

Newton's Second Law of Motion	L9/10	**VCSSU.9-10.5.4.**	The description and explanation of the motion of objects involves the interaction of forces and the exchange of energy and can be described and predicted using the laws of physics (VCSSU133)
		VCSSU.9-10.5.4.2.	Gathering data to analyse everyday motion produced by forces, for example, measurements of distance and time, velocity, mass, acceleration and force
		VCSSU.9-10.5.4.3.	Investigating the effects of applying different forces, including Earth's gravitational force, to familiar objects
		VCSIS.9-10.1.1.	Formulate questions or hypotheses that can be investigated scientifically, including identification of independent, dependent and controlled variables (VCSIS134)
		VCSIS.9-10.1.1.1.	Formulating questions that can be investigated within the scope of the classroom or field with available resources
		VCSIS.9-10.1.1.3.	Revising and refining research questions to target specific information and data collection or finding a solution to the specific problem identified
		VCSIS.9-10.2.1.1.	Explaining the choice of variables to be controlled, changed and measured in an investigation
		VCSIS.9-10.2.1.3.	Deciding how much data are needed to obtain reliable measurements
		VCSIS.9-10.2.2.	Select and use appropriate equipment and technologies to systematically collect and record accurate and reliable data, and use repeat trials to improve accuracy, precision and reliability (VCSIS136)
Properties of Waves	L9/10	**VCSSU.9-10.1.2.1.**	Considering how the properties of electromagnetic radiation relate to its uses, for example, radar, medical diagnosis and treatment, mobile phone communications and microwave cooking
		VCSSU.9-10.1.2.2.	Considering how information technology can be applied to different areas of science, for example, bioinformatics, the Square Kilometre Array, DNA sequencing and the analysis of radio astronomy signals
		VCSSU.9-10.1.2.3.	Considering how computer modelling and imaging technologies has improved knowledge and predictability of phenomena, for example, climate change, atmospheric pollution, plate tectonic movement, and body system functions and interactions

Wave Model vs. Particle Model	L9/10	**VCSSU.9-10.1.2.1.**	Considering how the properties of electromagnetic radiation relate to its uses, for example, radar, medical diagnosis and treatment, mobile phone communications and microwave cooking
		VCSSU.9-10.1.2.2.	Considering how information technology can be applied to different areas of science, for example, bioinformatics, the Square Kilometre Array, DNA sequencing and the analysis of radio astronomy signals
		VCSSU.9-10.1.2.3.	Considering how computer modelling and imaging technologies has improved knowledge and predictability of phenomena, for example, climate change, atmospheric pollution, plate tectonic movement, and body system functions and interactions
Variation of Traits	L9/10	**VCSSU.9-10.2.3.**	The transmission of heritable characteristics from one generation to the next involves DNA and genes (VCSSU119)
		VCSSU.9-10.2.3.1.	Using models and diagrams to represent the relationship between DNA, genes and chromosomes
		VCSSU.9-10.2.3.2.	describing mutations as changes in DNA or chromosomes and outlining the factors that contribute to causing mutations
		VCSSU.9-10.2.3.3.	Recognising that genetic information passed on to offspring is from both parents and involves the processes of fertilisation and meiosis
		VCSSU.9-10.1.2.2.	Considering how information technology can be applied to different areas of science, for example, bioinformatics, the Square Kilometre Array, DNA sequencing and the analysis of radio astronomy signals
		VCSSU.9-10.1.3.	The values and needs of contemporary society can influence the focus of scientific research (VCSSU116)
		VCSSU.9-10.1.3.2.	Considering how choices related to the use of fuels are influenced by environmental, social and political considerations
		VCSSU.9-10.1.3.3.	Considering the use of genetic testing for decisions such as genetic counselling, embryo selection, identification of carriers of genetic mutations and the use of this information for personal use or by organisation such as insurance companies or medical facilities

		VCSIS.9-10.3.1.	Construct and use a range of representations, including graphs, keys, models and formulas, to record and summarise data from students' own investigations and secondary sources, to represent qualitative and quantitative patterns or relationships, and distinguish between discrete and continuous data (VCSIS137)
		VCSIS.9-10.4.2.2.	Judging the validity of science-related media reports and how these reports might be interpreted by the public
Evidence of Common Ancestry	L9/10	**VCSSU.9-10.2.4.**	The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence (VCSSU120)
		VCSSU.9-10.2.4.4.	Evaluating and interpreting evidence for evolution, including the fossil record, chemical and anatomical similarities, and the geographical distribution of species
		VCSIS.9-10.3.1.	Construct and use a range of representations, including graphs, keys, models and formulas, to record and summarise data from students' own investigations and secondary sources, to represent qualitative and quantitative patterns or relationships, and distinguish between discrete and continuous data (VCSIS137)
		VCSIS.9-10.4.2.	Use knowledge of scientific concepts to evaluate investigation conclusions, including assessing the approaches used to solve problems, critically analysing the validity of information obtained from primary and secondary sources, suggesting possible alternative explanations and describing specific ways to improve the quality of data (VCSIS139)
		VCSIS.9-10.5.1.1.	Using secondary sources as well as students' own findings to help explain a scientific concept
The Big Bang Theory	L9/10	**VCSSU.9-10.4.3.**	The Universe contains features including galaxies, stars and solar systems; the Big Bang theory can be used to explain the origin of the Universe (VCSSU129)
		VCSSU.9-10.4.3.1.	Identifying the evidence supporting the Big Bang theory, for example, Edwin Hubble's observations and the detection of microwave radiation
		VCSSU.9-10.4.3.2.	Recognising that the age of the Universe can be derived by applying knowledge of the Big Bang theory
		VCSSU.9-10.4.3.3.	Describing how the evolution of the Universe, including the formation of galaxies and stars, has continued since the Big Bang

		VCSSU.9-10.1.1.	Scientific understanding, including models and theories, are contestable and are refined over time through a process of review by the scientific community (VCSSU114)
		VCSSU.9-10.1.2.	Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific discoveries (VCSSU115)
		VCSIS.9-10.4.2.	Use knowledge of scientific concepts to evaluate investigation conclusions, including assessing the approaches used to solve problems, critically analysing the validity of information obtained from primary and secondary sources, suggesting possible alternative explanations and describing specific ways to improve the quality of data (VCSIS139)
		VCSIS.9-10.4.2.3.	Using primary or secondary scientific evidence to support or refute a conclusion or claim
		VCSSU.9-10.1.1.4.	Recognising the contribution of Australian scientists, for example, Brian Schmidt and Penny Sackett, in the exploration and study of the Universe
Rising Carbon Dioxide Concentrations	L9/10	**VCSSU.9-10.4.2.**	Global systems, including the carbon cycle, rely on interactions involving the atmosphere, biosphere, hydrosphere and lithosphere (VCSSU128)
		VCSSU.9-10.4.2.3.	Distinguishing between 'natural' and 'enhanced' greenhouse effects
		VCSSU.9-10.1.2.3.	Considering how computer modelling and imaging technologies has improved knowledge and predictability of phenomena, for example, climate change, atmospheric pollution, plate tectonic movement, and body system functions and interactions
		VCSSU.9-10.1.3.	The values and needs of contemporary society can influence the focus of scientific research (VCSSU116)
		VCSSU.9-10.1.3.2.	Considering how choices related to the use of fuels are influenced by environmental, social and political considerations
		VCSIS.9-10.1.1.	Formulate questions or hypotheses that can be investigated scientifically, including identification of independent, dependent and controlled variables (VCSIS134)
		VCSIS.9-10.2.2.	Select and use appropriate equipment and technologies to systematically collect and record accurate and reliable data, and use repeat trials to improve accuracy, precision and reliability (VCSIS136)

		VCSIS.9-10.2.2.3.	Identifying how human error can influence the reliability of data
		VCSIS.9-10.4.2.1.	Discussing what is meant by 'validity' and how we can evaluate the validity of information in secondary sources
		VCSIS.9-10.4.2.2.	Judging the validity of science-related media reports and how these reports might be interpreted by the public
		VCSSU.9-10.1.3.1.	Investigating how social actions have led to changed government policies and social behavioural change in relation to the use of chlorofluorocarbons (CFCs) in aerosol spray cans
Atomic Structure and Bonding	L9/10	**VCSSU.9-10.3.1.**	All matter is made of atoms which are composed of protons, neutrons and electrons; natural radioactivity arises from the decay of nuclei in atoms (VCSSU122)
		VCSSU.9-10.3.1.1.	Describing and modelling the structure of atoms in terms of the nucleus, protons, neutrons and electrons
		VCSSU.9-10.3.1.2.	Comparing the mass and charge of protons, neutrons and electrons
		VCSSU.9-10.1.1.2.	Investigating the historical development of models of the structure of the atom
		VCSIS.9-10.2.1.	Independently plan, select and use appropriate investigation types, including fieldwork and laboratory experimentation, to collect reliable data, assess risk and address ethical issues associated with these investigation types (VCSIS135)
		VCSIS.9-10.2.1.4.	Using modelling and simulations, including using digital technologies, to investigate situations and events
		VCSIS.9-10.4.1.1.	Exploring relationships between variables using spreadsheets, databases, tables, charts, graphs and statistics
		VCSSU.9-10.3.1.3.	Describing in simple terms how alpha and beta particles and gamma radiation are released from unstable atoms
Changes in Climate	L9/10	**VCSSU.9-10.4.2.**	Global systems, including the carbon cycle, rely on interactions involving the atmosphere, biosphere, hydrosphere and lithosphere (VCSSU128)
		VCSSU.9-10.4.2.4.	Investigating the effect of climate change on sea levels and biodiversity

		VCSSU.9-10.1.2.3.	Considering how computer modelling and imaging technologies has improved knowledge and predictability of phenomena, for example, climate change, atmospheric pollution, plate tectonic movement, and body system functions and interactions
		VCSSU.9-10.1.3.	The values and needs of contemporary society can influence the focus of scientific research (VCSSU116)
		VCSSU.9-10.1.3.2.	Considering how choices related to the use of fuels are influenced by environmental, social and political considerations
		VCSIS.9-10.2.2.	Select and use appropriate equipment and technologies to systematically collect and record accurate and reliable data, and use repeat trials to improve accuracy, precision and reliability (VCSIS136)
		VCSIS.9-10.4.1.	Analyse patterns and trends in data, including describing relationships between variables, identifying inconsistencies in data and sources of uncertainty, and drawing conclusions that are consistent with evidence (VCSIS138)
		VCSIS.9-10.4.2.1.	Discussing what is meant by 'validity' and how we can evaluate the validity of information in secondary sources
		VCSIS.9-10.4.2.2.	Judging the validity of science-related media reports and how these reports might be interpreted by the public
Modeling Conservation of Matter	L9/10	**VCSSU.9-10.3.3.**	Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction mass is not created or destroyed (VCSSU124)
		VCSSU.9-10.3.3.3.	Recognising that the conservation of mass in a chemical reaction can be demonstrated by simple chemical equations
		VCSSU.9-10.3.4.	Different types of chemical reactions are used to produce a range of products and can occur at different rates; chemical reactions may be represented by balanced chemical equations (VCSSU125)
		VCSSU.9-10.3.4.1.	Investigating how chemical reactions result in the production of a range of useful substances, for example, fuels, metals and pharmaceuticals
		VCSSU.9-10.3.4.2.	Using word or symbol equations to represent chemical reactions
		VCSIS.9-10.1.1.	Formulate questions or hypotheses that can be investigated scientifically, including identification of independent, dependent and controlled variables (VCSIS134)

		VCSIS.9-10.1.1.1.	Formulating questions that can be investigated within the scope of the classroom or field with available resources
		VCSIS.9-10.2.1.1.	Explaining the choice of variables to be controlled, changed and measured in an investigation
		VCSIS.9-10.2.1.2.	Identifying and managing potential hazards of chemicals or biological materials used in experimental investigations or fieldwork
		VCSIS.9-10.2.1.3.	Deciding how much data are needed to obtain reliable measurements
		VCSIS.9-10.5.1.2.	Using a range of representations, including mathematical and symbolic forms, to communicate science ideas
The Dynamic Nature of Ecosystems	L9/10	**VCSSU.9-10.2.5.**	Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems (VCSSU121)
		VCSSU.9-10.2.5.2.	Using modelling to examine factors that affect population sizes, for example, seasonal changes, destruction of habitats, introduced species
		VCSSU.9-10.2.5.3.	Investigating how ecosystems change as a result of environmental change, for example, bushfires, drought and flooding
		VCSSU.9-10.1.2.3.	Considering how computer modelling and imaging technologies has improved knowledge and predictability of phenomena, for example, climate change, atmospheric pollution, plate tectonic movement, and body system functions and interactions
		VCSSU.9-10.1.3.	The values and needs of contemporary society can influence the focus of scientific research (VCSSU116)
		VCSSU.9-10.1.3.2.	Considering how choices related to the use of fuels are influenced by environmental, social and political considerations
		VCSIS.9-10.5.1.	Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations (VCSIS140)
		VCSSU.9-10.3.5.2.	Comparing respiration and photosynthesis and their role in biological processes
		VCSSU.9-10.1.1.1.	Considering how ideas about disease transmission have changed from medieval time to the present as knowledge has developed

Human Activities and Natural Systems	L9/10	**VCSSU.9-10.4.2.**	Global systems, including the carbon cycle, rely on interactions involving the atmosphere, biosphere, hydrosphere and lithosphere (VCSSU128)
		VCSSU.9-10.4.2.2.	Investigating how human activity affects global systems
		VCSIS.9-10.1.1.2.	Developing ideas from students' own or others' investigations and experiences to investigate further
		VCSIS.9-10.2.1.5.	Using the internet to facilitate collaboration in joint projects and discussions
		VCSIS.9-10.2.2.	Select and use appropriate equipment and technologies to systematically collect and record accurate and reliable data, and use repeat trials to improve accuracy, precision and reliability (VCSIS136)
		VCSIS.9-10.2.2.3.	Identifying how human error can influence the reliability of data
		VCSIS.9-10.4.2.	Use knowledge of scientific concepts to evaluate investigation conclusions, including assessing the approaches used to solve problems, critically analysing the validity of information obtained from primary and secondary sources, suggesting possible alternative explanations and describing specific ways to improve the quality of data (VCSIS139)
Ocean, Atmosphere, and Biosphere Interactions	L9/10	**VCSSU.9-10.4.2.**	Global systems, including the carbon cycle, rely on interactions involving the atmosphere, biosphere, hydrosphere and lithosphere (VCSSU128)
		VCSSU.9-10.4.2.1.	Modelling a nutrient cycle within the biosphere, for example, the carbon, nitrogen or phosphorus cycle
		VCSIS.9-10.1.1.3.	Revising and refining research questions to target specific information and data collection or finding a solution to the specific problem identified
		VCSIS.9-10.4.2.3.	Using primary or secondary scientific evidence to support or refute a conclusion or claim

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