Science 7–10

Implementation from 2026

The new Science 7–10 Syllabus (2023) is to be implemented from 2026.

- **2024 and 2025** – Plan and prepare to teach the new syllabus
- **2026** – Start teaching new syllabus

School sectors are responsible for implementing syllabuses and are best placed to provide schools with specific guidance and information on implementation given their understanding of their individual contexts.

Aim

The aim of the *Science 7–10 Syllabus* is to:

- Develop students' curiosity about, and interest in, science and the natural world
- Increase students' knowledge and understanding of the nature and practice of science, and the Working scientifically processes
- Encourage students to generate and analyse data, evaluate results, and make ethical, evidence-based decisions, as informed, reflective and scientifically literate citizens.

Table of outcomes

The table below displays the Science 7–10 focus areas and their associated outcomes. The relationship between Stage 4 and 5 and Life Skills outcomes is shown in the Related Life Skills column. Life Skills focus areas and their associated outcomes are listed in full in the Life Skills section of the syllabus.

Secondary (7–10)

Focus area	Stage 4	Stage 5
Working scientifically	SC4-WS-01 Observing SC4-WS-02 Questioning and predicting SC4-WS-03 Planning investigations SC4-WS-04 Conducting investigations SC4-WS-05 Processing data and information SC4-WS-06 Analysing data	SC5-WS-01 Observing SC5-WS-02 Questioning and predicting SC5-WS-03 Planning investigations SC5-WS-04 Conducting investigations SC5-WS-05 Processing data and information SC5-WS-06 Analysing data and information

	SC4-WS-06 Analysing data and information SC4-WS-07 Problem-solving SC4-WS-08 Communicating	information SC5-WS-07 Problem-solving SC5-WS-08 Communicating
Observing the Universe	SC4-OTU-01, SC4-WS-01, SC4-WS-04	No Stage 5 outcomes
Forces	SC4-FOR-01, SC4-WS-02, SC4-WS-05, SC4-WS-06, SC4-WS-07	No Stage 5 outcomes
Cells and classification	SC4-CLS-01, SC4-WS-01, SC4-WS-04, SC4-WS-08	No Stage 5 outcomes
Solutions and mixtures	SC4-SOL-01, SC4-WS-03, SC4-WS-04, SC4-WS-07	No Stage 5 outcomes
Living systems	SC4-LIV-01, SC4-WS-02, SC4-WS-05, SC4-WS-08	No Stage 5 outcomes
Periodic table and atomic structure	SC4-PRT-01, SC4-WS-05, SC4-WS-06	No Stage 5 outcomes
Change	SC4-CHG-01, SC4-WS-01, SC4-WS-03, SC4-WS-04	No Stage 5 outcomes
Data science (Stage 4: Data science 1; Stage 5: Data science 2)	SC4-DA1-01, SC4-WS-06, SC4-WS-07	SC5-DA2-01, SC5-WS-06, SC5-WS-07, SC5-WS-08
Energy	No Stage 4 outcomes	SC5-EGY-01, SC5-WS-01, SC5-WS-04, SC5-WS-07
Disease	No Stage 4 outcomes	SC5-DIS-01, SC5-WS-06, SC5-WS-08
Materials	No Stage 4 outcomes	SC5-MAT-01, SC5-WS-03, SC5-WS-07, SC5-WS-08
Environmental sustainability	No Stage 4 outcomes	SC5-ENV-01, SC5-WS-06, SC5-WS-07
Genetics and evolutionary change	No Stage 4 outcomes	SC5-GEV-01, SC5-GEV-02, SC5-WS-05, SC5-WS-08
Reactions	No Stage 4 outcomes	SC5-RXN-01, SC5-RXN-02, SC5-WS-01, SC5-WS-02, SC5-WS-03, SC5-WS-04
Waves and motion	No Stage 4 outcomes	SC5-WAM-01, SC5-WAM-02, SC5-WS-04, SC5-WS-05

Outcomes and content for Stage 4

Working scientifically (Stage 4)

Outcomes

A student:

- uses scientific tools and instruments for observations SC4-WS-01
- identifies questions and makes predictions to guide scientific investigations SC4-WS-02
- plans safe and valid investigations SC4-WS-03
- follows a planned procedure to undertake safe and valid investigations SC4-WS-04
- uses a variety of ways to process and represent data SC4-WS-05
- uses data to identify trends, patterns and relationships, and draw conclusions SC4-WS-06
- identifies problem-solving strategies and proposes solutions SC4-WS-07
- communicates scientific concepts and ideas using a range of communication forms SC4-WS-08

Related Life Skills outcomes: SCLS-WS-01, SCLS-WS-02, SCLS-WS-03, SCLS-WS-04, SCLS-WS-05, SCLS-WS-06, SCLS-WS-07, SCLS-WS-08

Content

Observing

- Make observations using the senses to compare properties of objects, living things and events
- Demonstrate competency when using scientific equipment to make observations
- Make relevant observations and measure quantities, including length, mass, temperature and volume
- Make a series of observations and measurements that are appropriate to answer a question that has been posed

Questioning and predicting

- Identify questions and problems that can be investigated scientifically
- Make predictions based on scientific knowledge and observations

Planning investigations

- Identify the purpose of an investigation
- Identify the independent, dependent and controlled variable(s)
- Identify the type of data that needs to be collected in a range of investigations
- Outline the method and equipment needed to undertake an investigation

- Outline steps to manage safety risks before, during and after an investigation

Conducting investigations

- Employ safe work practices and manage risks using WHS practices
- Assemble and use appropriate equipment and resources to perform an investigation
- Follow the planned procedure, including the measurement and control of variables
- Record observations and measurements accurately, using correct units
- Use a wide range of reliable secondary sources and acknowledge their sources

Processing data and information

- Extract information from texts, diagrams, flow charts, tables, databases, graphs and multimedia resources
- Use a range of representations to organise data, including graphs, keys, models, diagrams, tables and spreadsheets
- Include sources, titles, labels and scales when displaying data in a graph
- Select the type of graph best suited to represent various datasets
- Calculate the mean and range of a dataset
- Convert between units of measurement

Analysing data and information

- Assess the reliability of gathered data and information by comparing it to observations and information from other sources
- Identify patterns and relationships in graphs, keys, models, diagrams, tables and spreadsheets
- Identify data which supports or refutes a testable statement or proposed solution
- Use scientific understanding to draw conclusions
- Propose inferences based on information and observations
- Evaluate the method used to investigate a question or solve a problem

Problem-solving

- Identify problems and devise possible strategies or solutions
- Use identified strategies to suggest possible solutions to a familiar problem
- Use given evaluation criteria to select optimal solutions
- Identify cause-and-effect relationships and develop models to explain phenomena
- Evaluate the suitability of different strategies for solving an identified problem

Communicating

- Present findings and ideas in a range of communication forms, using scientific terms,

diagrams and graphs
- Create written texts to communicate scientific concepts, ideas or investigations using conventional scientific text structures

Observing the Universe (Stage 4)

Outcomes
A student:
– explains how observations are used by scientists to increase knowledge and understanding of the Universe SC4-OTU-01
– uses scientific tools and instruments for observations SC4-WS-01
– follows a planned procedure to undertake safe and valid investigations SC4-WS-04

Related Life Skills outcomes: SCLS-OTU-01, SCLS-WS-01, SCLS-WS-04

Content

Working scientifically: In this focus area, students develop skills in making observations, using tools, and following instructions safely.

Nature of science
– Discuss that the purpose of science is to build knowledge and understanding through observation, experimentation and analysis
– Recognise how scientific knowledge can be represented in branches of biology, chemistry, physics and geology, and consider interdisciplinary approaches
– Explore why scientific research is collaborative and builds on the work of others
– Identify that scientific theories and laws are based on repeated experiments and observations

Practice of science
– Identify that the practice of science involves Working scientifically processes
– Use a variety of analog and digital measuring devices and compare their range, sensitivity and accuracy

Example(s):
– Using the senses, a thermometer, digital scales, a stopwatch.

- Compare and contrast observations made using the senses vs. measuring equipment

Example(s):
– Observing a leaf or insect with the eye vs. using a microscope or scanning electron microscope (SEM).

- Explain how observations of natural phenomena can be used to make inferences and testable predictions

- Explore different approaches scientists use (systematic observations, controlled experiments)
- Follow a sequence of instructions to conduct an investigation and observe how changing an independent variable affects a dependent variable
- Conduct an investigation using tools to make observations over time

Example(s):
– Measuring air temperature and relative humidity; temperature changes during the day in shaded vs. unshaded areas.

- Tabulate and graph data to identify trends, patterns and relationships, and draw conclusions

Space science
– Compare historical and current solar system models and how new evidence leads to changes
– Explain predictable and observable phenomena on Earth caused by relative positions of Sun, Earth, Moon
– Use models or simulations to explain lunar phases and eclipses

Aboriginal and Torres Strait Islander Peoples' Cultural Knowledges of astronomy
– Investigate how Aboriginal and Torres Strait Islander accounts align with scientific explanations of lunar phases and tides
– Explain how Aboriginal and Torres Strait Islander Peoples use stars to identify weather phenomena

Example(s):
– Twinkling of stars used by Meriam People to indicate seasonal changes.

- Describe how Aboriginal and Torres Strait Islander Peoples predicted seasonal phenomena by observing stars and Moon phases

Example(s):
– Pitjantjatjara People use star clusters to predict winter frost; Torres Strait Islander Peoples use the yam star (Kek) to time yam harvest.

Observing the Universe in context
– Investigate how a recent advancement in science increased knowledge of the Universe

Example(s):
– Advancements in astronomy by Australian scientists.

Forces (Stage 4)

Outcomes
A student:
– describes the effects of forces in everyday contexts SC4-FOR-01

- identifies questions and makes predictions SC4-WS-02
- uses a variety of ways to process and represent data SC4-WS-05
- uses data to identify trends, patterns and relationships, and draw conclusions SC4-WS-06
- identifies problem-solving strategies and proposes solutions SC4-WS-07

Related Life Skills outcomes: SCLS-FOR-01, SCLS-WS-02, SCLS-WS-05, SCLS-WS-06, SCLS-WS-07

Content

Working scientifically: Students develop skills in identifying questions, processing data, and drawing conclusions.

Forces in action
- Explain forces as direct (contact) or indirect (non-contact)

Example(s):
- Direct: physical touch, friction.
- Indirect: magnetic, electrical, gravitational fields.

- Conduct a practical investigation on effects of a range of direct and indirect forces
- Use force diagrams to model balanced/unbalanced forces

Example(s):
- Free-body diagrams showing direction and magnitude of forces.

- Analyse force diagrams to make predictions
- Examine relationship between force and energy
- Describe electrostatic and gravitational forces between objects
- Use concept of forces to describe motion of objects in orbit

Example(s):
- Planets orbiting the Sun; satellites orbiting Earth.

- Define weight force as mass × acceleration due to gravity ($F = mg$)
- Perform calculations using $F = mg$

Example(s):
- Calculate weight on Earth with $g \approx 9.8\ m/s^2$.

Magnets in everyday life
- Describe how magnets attract/repel each other based on polarity
- Investigate effect of distance on magnet action
- Observe/map magnetic fields
- Construct electromagnets and compare their strength

Simple machines in everyday life
- Explore role of simple machines (past and present)

Example(s):
- Bike wheel (wheel/axle), crane (pulley), skateboard ramp (inclined plane), drill (screw), knife (wedge), using a spoon as a lever, woomeras used by Aboriginal Peoples, bow and arrows by Torres Strait Islander Peoples.

- Conduct investigations using simple machines to investigate forces
- Investigate how levers/pulleys change magnitude of force needed for a task
- Identify examples of Aboriginal and Torres Strait Islander Peoples' application of force knowledge

Example(s):
- Grinding stones to sharpen tools or crush plant material.

- Investigate how simple machines solve everyday issues

Forces in context
- Investigate examples of forces and magnetism in familiar contexts

Example(s):
- Electromagnets in maglev trains, bicycles, children's toys.

Cells and classification (Stage 4)

Outcomes
A student:
- describes the unique features of cells in living things and how structural features can be used to classify organisms SC4-CLS-01
- uses scientific tools and instruments for observations SC4-WS-01
- follows a planned procedure to undertake safe and valid investigations SC4-WS-04
- communicates scientific concepts and ideas using a range of communication forms SC4-WS-08

Related Life Skills outcomes: SCLS-FNS-01, SCLS-FNS-02, SCLS-WS-01, SCLS-WS-04, SCLS-WS-08

Content

Classification of living things
- Describe the characteristics of living things
- Discuss the role of classification
- Classify species using scientific conventions (kingdom, phylum, class, order, family, genus, species)

Example(s):
- Human (Homo sapiens), bottlenose dolphin (Tursiops truncatus), golden wattle (Acacia pycnantha).

- Conduct an investigation to observe and identify similarities/differences in organisms
- Investigate how organisms in an Australian habitat are adapted and document findings
- Interpret dichotomous keys
- Explain how plants and animals are classified in Aboriginal and Torres Strait Islander Cultures

Example(s):
- Classification based on Cultural significance and Kinship (e.g. spear trees, shield trees, canoe trees).

Cells
- Outline cell theory
- Identify common cell structures (membrane, cytoplasm, nucleus, mitochondria, chloroplasts)
- Compare plant/animal cells
- Conduct investigation to observe fungi, bacteria, plant, animal cells
- Identify respiration (mitochondria) and photosynthesis (chloroplasts) as important processes
- Draw single-celled organisms from microscope observations

Example(s):
- Drawings from a microscope or images online.

- Describe role of specialised cells in multicellular organisms
- Represent arrangement of specialised cells in tissues/organs
- Examine relationship between structure and function of specialised cells

Example(s):
- Intestinal villi cells for absorption, red blood cells without a nucleus for oxygen transport.

- Conduct practical investigation to compare prepared slides of specialised cells

Example(s):
- Muscle cells (long, cylindrical), leaf cells (box-like with cell wall, chloroplasts).

Cells and classification in context
- Research an organism to explain its classification and confirm it shows characteristics of life

Solutions and mixtures (Stage 4)

Outcomes
A student:
- explains how the properties of substances enable separation in a range of techniques SC4-SOL-01

- plans safe and valid investigations SC4-WS-03
- follows a planned procedure to undertake safe and valid investigations SC4-WS-04
- identifies problem-solving strategies and proposes solutions SC4-WS-07

Related Life Skills outcomes: SCLS-SOL-01, SCLS-WS-03, SCLS-WS-04, SCLS-WS-07

Content

Properties of matter
- Identify the 3 main states of matter and how they occur with water on Earth

Example(s):
- Ice (solid), water (liquid), vapour (gas).

- Conduct an investigation to measure and graph the temperature of water as it changes state

Example(s):
- Heating ice until boiling, recording temperature each minute.

- Represent changes of state in terms of particle arrangement and movement

Example(s):
- Melting, freezing, boiling, evaporation, condensation, sublimation.

- Compare properties of matter in different states and explain differences using particle theory

Properties of water
- Investigate physical properties of water (density, buoyancy, surface tension)
- Conduct investigation to measure density of water and other substances, compare with SI data

Example(s):
- Use data from “Properties of some common elements” table.

- Determine volume and mass of objects to calculate density ($\rho = m/V$)

Solutions
- Investigate what substances dissolve in water; define soluble, insoluble, solubility, solute, solvent, solution
- Conduct investigation to measure solubility of different solutes

Example(s):
- Documenting a practical report (aim, method, results).

- Qualitatively investigate temperature effect on solubility

Example(s):
- Hot water dissolves more sugar than cold water.

- Describe how solutions can be modeled using particle theory
- Compare dilute, concentrated, saturated, supersaturated solutions

Example(s):
- Preparing a range of dilutions from concentrated solution; calculating concentration in g/L, % v/v.

Separating mixtures
- Distinguish between atoms, mixtures, compounds using particle theory
- Classify matter as pure substances (elements, compounds) or impure (mixtures)
- Explain how physical properties are used to separate mixtures

Example(s):
- Filtration, evaporation, crystallisation, chromatography, decantation.

- Conduct investigations to explore techniques to separate mixtures

Example(s):
- Filtration, evaporation, distillation, centrifugation.

- Investigate techniques used by Aboriginal and Torres Strait Islander Peoples to separate mixtures

Example(s):
- Winnowing, yandying, hand-picking, sieving, filtering, steam distillation, cold pressing.

- Investigate an industrial separation technique

Example(s):
- Recycling and water purification techniques.

Solutions and mixtures in context
- Model how a body of water becomes polluted and plan an investigation to remove pollutants

Living systems (Stage 4)

Outcomes
A student:
- describes the role, structure and function of a range of living systems and their components SC4-LIV-01
- identifies questions and makes predictions SC4-WS-02
- uses a variety of ways to process and represent data SC4-WS-05
- communicates scientific concepts and ideas SC4-WS-08

Related Life Skills outcomes: SCLS-FNS-01, SCLS-FNS-02, SCLS-WS-02, SCLS-WS-05, SCLS-WS-08

Content

Body systems
- Explain interrelationship among cells, tissues, organs
- Identify role of digestive, circulatory, respiratory, excretory systems; name major organs
- Draw or annotate organ system models
- Describe how structures and specialised cells enable organ systems to function

Example(s):
- Villi in small intestine absorb nutrients.

- Explain how disorder/disease in a body system affects overall functioning

Example(s):
- Removal or loss of function of the spleen or gall bladder.

- Describe how components of each body system interact efficiently

Example(s):
- The epiglottis protects airways during swallowing.

Plant systems
- Determine role, structure, function of plant components (xylem, phloem)
- Use tools to observe specialised plant cells and tissues

Example(s):
- Plant dissection; placing a plant stem in dyed water to observe transpiration.

Ecosystems
- Identify components of an ecosystem (biotic, abiotic)
- Investigate interactions of biotic/abiotic factors
- Identify how matter and energy cycle
- Create a food web, energy pyramid
- Create written texts to explain energy pyramids

Example(s):
- A factual description or descriptive report.

- Examine secondary-source data on factors changing populations (e.g., introduction of new species), identify trends and draw conclusions

Example(s):
- Mass extinction (dodo), human-led extinction (Tasmanian tiger).

Living systems in context
- Investigate factors leading to species endangerment or extinction in Australia

Periodic table and atomic structure (Stage 4)

Outcomes
A student:
- explains how uses of elements and compounds are influenced by understanding their properties SC4-PRT-01
- uses a variety of ways to process and represent data SC4-WS-05
- uses data to identify trends, patterns and relationships SC4-WS-06

Related Life Skills outcomes: SCLS-SOL-01, SCLS-WS-05, SCLS-WS-06

Content

Classification of matter
- Identify common elements in everyday objects

Example(s):
- Aluminium in cans, carbon in pencils, copper in wires, gold in jewellery.

    - Investigate properties of metals, non-metals, metalloids

Example(s):
- Heat/electrical conductivity, lustre, melting point.

    - Explain how properties relate to uses

Example(s):
- Aluminium is lightweight, used in cans, utensils, aircraft.

Atomic structure
- Identify atom as smallest unit of an element
- Identify protons, neutrons, electrons
- Describe their location, charge, mass using planetary model
- Outline how atomic models changed over time
- Explain how new technologies led to detailed atomic understanding

Periodic table
- Outline patterns in periodic table, including reactivity

Example(s):
- Rows (periods), columns (groups) with similar properties.

- Predict properties of elements based on position
- Identify symbols of elements

Example(s):
- C (carbon), Fe (iron), Na (sodium).

- Use periodic table to identify elements in compounds

Example(s):
- H_2O (water), CH_4 (methane), CO_2 (carbon dioxide).

- Investigate tests to identify metals/non-metals

Example(s):
- Flame tests, 'pop' test for hydrogen.

- Model atomic structure of first 18 elements
- Describe historical development of periodic table

Example(s):
- Written recount or sequential explanation.

Periodic table in context
- Investigate how properties and availability of materials influence their uses

Change (Stage 4)

Outcomes

A student:
- explains how energy causes geological and chemical change SC4-CHG-01
- uses scientific tools and instruments for observations SC4-WS-01
- plans safe and valid investigations SC4-WS-03
- follows a planned procedure to undertake safe and valid investigations SC4-WS-04

Related Life Skills outcomes: SCLS-CHG-01, SCLS-EGU-01, SCLS-WS-01, SCLS-WS-03, SCLS-WS-04

Content

Energy transfers
- Identify conduction, convection, radiation
- Describe different forms of potential (PE) and kinetic (KE) energy

- Identify examples of energy change
- Use investigations/representations to illustrate energy transformations

Example(s):
- Flow diagrams, simulations, models.

- Define open/closed systems; apply law of conservation of energy
- Illustrate transformations, e.g. radiant energy from Sun → thermal energy → cooking food in a solar oven.

Chemical change
- Undertake experiments to identify indicators of physical/chemical changes

Example(s):
- Flame/light, colour change, bubbles forming, temperature change.

- Describe initial/final changes in a chemical reaction, write word equation

Example(s):
- Magnesium + oxygen → magnesium oxide.

- Investigate energy changes in chemical reactions
- Model cellular processes (respiration, photosynthesis) in a practical investigation

Geological change
- Describe tectonic plate movement processes
- Identify evidence used to develop plate tectonics theory
- Recognise earthquakes/volcanoes as evidence of geological changes
- Describe Aboriginal and Torres Strait Islander Cultural accounts of earthquakes/volcanoes

Example(s):
- Awabakal/Worimi Peoples' Dreaming story of Nobbys; Bundjalung Peoples' stories about Wollumbin.

- Compare observable properties of different rocks/minerals
- Use rock cycle to explain formation/transformation of rocks
- Model fossil formation and explain fossil evidence of past organisms
- Recognise law of superposition for relative age of rock strata
- Describe elemental composition of Earth and other planets

Change in context
- Observe or design a chain reaction machine to represent energy stores and explain transfers

Data science 1 (Stage 4)

Outcomes

A student:

- explains how data is used by scientists to model and predict phenomena SC4-DA1-01
- uses data to identify trends, patterns and relationships SC4-WS-06
- identifies problem-solving strategies and proposes solutions SC4-WS-07

Related Life Skills outcomes: SCLS-DAS-01, SCLS-WS-06, SCLS-WS-07

Content

Data science context: Can be taught alongside other areas.

Data

- Examine a range of data sources and applications

Example(s):

- Big data, experimental data, websites, digital technology.

  - Examine the digital footprint created online
  - Recognise data science as interdisciplinary (statistics, algorithms, systems)

Scientific models

- Compare scientific inquiries with nonscientific approaches

Example(s):

- Evidence-based medicine vs. iridology; neuroscience vs. phrenology.

  - Identify that models are representations of real-world phenomena
  - Identify types of models (diagrams, 3D models, simulations, formulas)
  - Analyse a model to identify data/trends and make predictions

Example(s):

- Weather models to forecast conditions.

  - Recognise that computer models simulate phenomena and allow variable manipulation

Applications of models

- Identify data/observations used by scientists for model development
- Outline how scientists develop workable theories from models

Example(s):

- The Big Bang model.

Collecting, using and analysing datasets
- Formulate questions addressable with data
- Conduct repeated trials, calculate mean/range, discuss accuracy/reliability
- Analyse data to look for patterns, test predictions

Data science 1 in context
- Create a model to explain an observable phenomenon

Example(s):
- A visual/mathematical/computer model.

Outcomes and content for Stage 5

Working scientifically (Stage 5)

Outcomes
A student:
- selects and uses scientific tools and instruments for accurate observations SC5-WS-01
- develops questions and hypotheses for scientific investigation SC5-WS-02
- designs safe, ethical, valid and reliable investigations SC5-WS-03
- follows a planned procedure to undertake safe, ethical, valid and reliable investigations SC5-WS-04
- selects and uses a range of tools to process and represent data SC5-WS-05
- analyses data from investigations to identify trends, patterns and relationships, and draws conclusions SC5-WS-06
- selects suitable problem-solving strategies and evaluates proposed solutions to identified problems SC5-WS-07
- communicates scientific arguments with evidence, using scientific language and terminology SC5-WS-08

Related Life Skills outcomes: SCLS-WS-01, SCLS-WS-02, SCLS-WS-03, SCLS-WS-04, SCLS-WS-05, SCLS-WS-06, SCLS-WS-07, SCLS-WS-08

Content

Observing

- Select and use equipment correctly, including digital technologies, to make observations that increase the accuracy of measurements appropriate to the task
- Make a series of observations with precision

Questioning and predicting

- Formulate questions or hypotheses that can be investigated scientifically

- Predict outcomes based on observations and scientific knowledge

Planning investigations

- Describe the purpose of an investigation
- Explain the use of variables and experimental controls in a valid scientific investigation
- Assess the types of data that need to be collected in a range of investigation types
- Select and explain investigation methods, including fieldwork and laboratory experimentation, to collect reliable data
- Identify risks, consider ethical issues and select suitable materials and technologies for a range of investigations
- Modify an investigation in response to new evidence

Conducting investigations

- Implement safe work practices and manage risks
- Assemble, construct and manipulate identified equipment to perform the investigation
- Follow the planned procedure and identify and respond to errors if they occur
- Systematically and accurately collect and record data, information, evidence and findings
- Extract information from a wide range of reliable secondary sources and acknowledge these sources using an accepted referencing style

Processing data and information

- Select and use a range of representations to organise data and information, including graphs, keys, models, diagrams, tables and spreadsheets
- Select and extract information from texts, diagrams, flow charts, tables, databases, graphs and multimedia resources
- Calculate a range of descriptive statistics using SI units
- Identify data which supports or refutes questions, hypotheses and proposed solutions to problems
- Describe specific ways to improve the quality of data collected in an investigation

Analysing data and information

- Describe patterns and trends, including inconsistencies in data and information
- Describe relationships between variables
- Assess the validity and reliability of first-hand data
- Use graphed data from investigations to extrapolate or interpolate information to make predictions
- Use knowledge of scientific concepts to draw conclusions that are consistent with evidence
- Synthesise data and information to develop evidence-based arguments
- Evaluate conclusions and evidence, including identifying sources of uncertainty and possible

alternative explanations
- Analyse the validity of information from secondary sources

Problem-solving

- Select suitable strategies and implement them to solve an identified problem
- Develop evaluation criteria relevant to identified problems
- Assess the solutions proposed based on the relevant evaluation criteria
- Use cause-and-effect relationships and models to explain ideas and make predictions
- Evaluate different approaches used to solve problems
- Evaluate claims using scientific knowledge and findings from investigations

Communicating

- Present scientific arguments using evidence, correct scientific language and terminology, as appropriate to audience and purpose
- Create written texts to communicate scientific investigations, explain scientific theories and principles, structure a scientific argument, and evaluate findings in light of scientific knowledge
- Recognise that scientific texts develop arguments by encouraging the reader to adopt a specific perspective and positioning them to accept the authority of a text

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Energy (Stage 5)

Outcomes
A student:
- evaluates current and alternative energy use based on ethical and sustainability considerations SC5-EGY-01
- selects and uses scientific tools and instruments for accurate observations SC5-WS-01
- follows a planned procedure to undertake safe, ethical, valid and reliable investigations SC5-WS-04
- selects suitable problem-solving strategies and evaluates proposed solutions to identified problems SC5-WS-07

Related Life Skills outcomes: SCLS-EGU-01, SCLS-WS-01, SCLS-WS-04, SCLS-WS-07

Content

Working scientifically: Develop skills in selecting and using tools, conducting investigations, and problem-solving.

Law of conservation of energy
- Use the law of conservation of energy and calculations to explain that total energy is maintained in energy transfers and transformations in a closed system

- Explain efficiency in relation to energy transfers
- Explain how to improve energy efficiency in energy transfers and transformations

Sources of energy
- Identify different types of energy sources

Example(s):
- Biogas, biomass, coal, crude oil, gas, geothermal, nuclear, solar, wind.

- Describe how electrical energy can be produced from different types of sources
- Evaluate advantages and disadvantages of using renewable and non-renewable sources of energy to generate electricity

Electrical energy
- Identify the elements of a complete circuit

Example(s):
- Conductive path, source of electrical power, load (switch optional).

- Construct circuits and draw circuit diagrams
- Measure and compare voltage and current at different points in series and parallel circuits
- Conduct an investigation to determine the relationship between V, I, and R as per Ohm's law (V=IR)
- Conduct an investigation to compare the energy transformed over time in model circuits or appliances

Example(s):
- Using a plug power meter, heating water.

- Investigate energy star ratings of appliances and explain the criteria

Global future energy needs
- Evaluate ways to optimise current energy use
- Examine data to identify past trends in energy use, predict future demands (state, national, global)
- Explain reasons for developing alternative energy sources

Example(s):
- Dwindling fossil fuels, greenhouse effect, climate change.

Energy in context
- Use data, evidence and research to evaluate development of alternative energy sources to meet/reduce global energy demand

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Disease (Stage 5)

Outcomes

A student:

- explains how understanding of the causes of disease can be used to prevent and manage the spread of disease SC5-DIS-01
- analyses data from investigations to identify trends, patterns and relationships, and draws conclusions SC5-WS-06
- communicates scientific arguments with evidence SC5-WS-08

Related Life Skills outcomes: SCLS-DIS-01, SCLS-WS-06, SCLS-WS-08

Content

Working scientifically: Develop skills in analysing data and communicating arguments with evidence.

Homeostasis

- Identify importance of maintaining stable internal conditions (temperature, pH, hormone levels)
- Investigate organism's observable response to stimuli

Example(s):

- Pupil dilation in response to light.

  - Identify role of feedback loops in maintaining homeostasis

Example(s):

- Temperature regulation (negative feedback); blood clotting (positive feedback).

  - Compare and contrast nervous and endocrine system responses
  - Describe how nervous and endocrine systems coordinate body's response to stimuli

Infectious and non-infectious diseases

- Distinguish between infectious and non-infectious diseases
- Identify causes of each

Example(s):

- Non-infectious: genetics, environment, nutrition. Infectious: pathogens.

  - Compare epidemics, endemics, pandemics
  - Investigate data on a common non-infectious disease in Australians

Example(s):

- Graphical data showing incidence of Type 2 diabetes, cancers, heart disease, stroke.

  - Use modelling to investigate how infectious diseases can spread

- Identify how body prevents pathogen entry and responds if they enter
- Outline how vaccination stimulates antibody production

Disease control and prevention
- Describe ways to reduce incidence of non-infectious diseases

Example(s):
- Public health measures against smoking, promoting healthy lifestyles.

- Assess ways to reduce incidence/spread of infectious diseases

Example(s):
- Personal hygiene, quarantine, education, medical treatments.

- Investigate Aboriginal and Torres Strait Islander Peoples' use of plants to prevent/control disease

Example(s):
- Tea tree oil (Bundjalung People), bloodwood sap as antiseptic (Gumbaynggirr People).

- Analyse immunisation program data to identify trends, patterns, relationships and document conclusions

Disease in context
- Investigate technological advances in Australia addressing disease, disorders, trauma

Example(s):
- Fiona Wood's spray-on skin, epidemiologist Fiona Stanley's work, Elizabeth Blackburn's telomere research, Monash Vision Group's bionic eye.

Materials (Stage 5)

Outcomes
A student:
- assesses the uses of materials based on their physical and chemical properties SC5-MAT-01
- designs safe, ethical, valid and reliable investigations SC5-WS-03
- selects suitable problem-solving strategies and evaluates proposed solutions SC5-WS-07
- communicates scientific arguments with evidence SC5-WS-08

Related Life Skills outcomes: SCLS-RES-01, SCLS-RES-02, SCLS-WS-03, SCLS-WS-07, SCLS-WS-08

Content

Working scientifically: Develop skills in planning investigations, problem-solving, communication.

Resources
- Identify finite nature of minerals/resources in Australia
- Investigate products produced from Australian minerals/resources

Example(s):
- Coal → electricity generation; iron ore → steel; bauxite → aluminium.

- Explain how Aboriginal and Torres Strait Islander Peoples used minerals/resources
- Evaluate environmental impact of extracting/using a named resource and document in a report

Bonding
- Use valency to describe electron gain/loss/sharing for stable configuration
- Explain noble gas configuration
- Describe ionic, covalent, metallic bonds
- Use models to describe formation of cations/anions
- Recognise some elements exist as diatomic molecules

Example(s):
- Br_2, I_2, N_2, Cl_2, H_2, O_2, F_2.

- Construct chemical formulas for common ionic/covalent compounds

Example(s):
- NaCl, MgO, H_2O, CO_2.

- Conduct investigation to observe/compare properties of ionic, covalent, metallic substances and explain uses

Chemistry of organic compounds
- Distinguish between organic and inorganic compounds
- Describe how hydrocarbons are separated from crude oil and identify their uses

Example(s):
- Fractional distillation; fuels, asphalt, clothing, polymers.

- Use IUPAC nomenclature for simple organic compounds
- Identify/reproduce structure of simple alkanes C1–C8 (straight-chain)
- Describe differences between complete/incomplete combustion of hydrocarbons, compare products/energy

Example(s):
- Observing a Bunsen burner flame open (complete) vs closed (incomplete).

- Research uses of hydrocarbons and how this changed over time

Polymers
- Identify raw materials for polymers

Example(s):
- Polyethylene from ethene.

- Investigate properties of polymers
- Survey local area to determine quantity/types of polymers
- Conduct investigation on biodegradability of different packaging materials
- Investigate bioaccumulation of microplastics

Materials in context
- Assess environmental impacts of alternatives to crude oil-derived materials

Example(s):
- Replacing plastic straws with paper straws.

Environmental sustainability (Stage 5)

Outcomes
A student:
- analyses the impact of human activity on the natural world SC5-ENV-01
- analyses data to identify trends, patterns and relationships SC5-WS-06
- selects suitable problem-solving strategies and evaluates solutions SC5-WS-07

Related Life Skills outcomes: SCLS-RES-01, SCLS-RES-02, SCLS-WS-06, SCLS-WS-07

Content

Working scientifically: Develop skills in data analysis and problem-solving.

Sustainability
- Identify principles/goals of sustainability
- Apply scientific understanding to propose valid solutions to sustainability problems

Climate science
- Distinguish between climate and weather
- Investigate data to determine climate trends
- Explain how natural greenhouse effect influences global climate

Example(s):
- Ice core samples as evidence of increasing CO_2.

- Analyse global emissions/temperature data to explain enhanced greenhouse effect and its impact on climate/ecosystems

Example(s):
– Arctic, ocean, Australian ecosystems.

- Identify advantages/limitations of methods to reduce greenhouse gas emissions
- Analyse data showing relationship between industrialisation and global temperatures

Impacts of present-day climate change
– Identify characteristics of climate change (global temperature rise, weather pattern variations, melting ice, rising sea levels)
– Investigate and report consequences of climate change

Example(s):
– Temperature increases → changed precipitation, flooding/drought frequency, ocean acidity.

- Investigate effects of climate change on water cycle and ecosystems
- Investigate how satellites collect global data (ocean temps, sea levels, forest/ice cover) to evaluate climate change impact

Alternative resource use and recycling
– Describe causes of environmental pollution and its implications
– Research Aboriginal and Torres Strait Islander Peoples' sustainable harvesting practices and Cultural protocols
– Discuss alternatives to current resource use (reduce, reuse, recycle)
– Describe current recycling processes
– Investigate scientists' innovative recycling methods

Example(s):
– Veena Sahajwalla's methods for recycling materials.

Environmental sustainability in context
– Discuss link between human activity and a specific pollution concern

Example(s):
– Space junk, oceanic garbage patch.

Genetics and evolutionary change (Stage 5)

Outcomes
A student:
– describes the relationship between the diversity of living things and the theory of evolution SC5-GEV-01

- explains how DNA is responsible for the transmission of heritable characteristics and can be manipulated SC5-GEV-02
- selects and uses a range of tools to process and represent data SC5-WS-05
- communicates scientific arguments with evidence SC5-WS-08

Related Life Skills outcomes: SCLS-GEV-01, SCLS-FNS-01, SCLS-WS-05, SCLS-WS-08

Content

DNA structure and function
- All organisms have information coded in genetic material
- Observe/model arrangement of genetic information (DNA, gene, chromosome, genome)
- Relate DNA double helix structure to function (encoding proteins, replication)

Example(s):
- DNA extraction from fruit; prepared slides of cells; molecular animations.

  - Discuss contributions of scientists to discovery of DNA structure

Variation and inheritance
- Outline how genetic info is passed by sexual/asexual reproduction
- Multiple genes/environmental factors interact in most traits
- Explain how DNA mutation results in genetic variation (beneficial, harmful, minimal)
- Connect genotypes to phenotypes (Mendelian inheritance)

Example(s):
- Flower colour, freckles, dimples, widow's peak.

  - Use pedigrees, Punnett squares to model gene-trait relationships and predict inheritance patterns

Genetic technologies
- Identify examples of current/emerging genetic technologies

Example(s):
- Recombinant proteins, gene therapy.

  - Discuss applications in conservation, agriculture, industry, medicine
  - Discuss implications (social, economic, ethical) of genetic testing

The theory of evolution and evidence of natural selection
- Explain how natural selection/isolation lead to changes within/between species

Example(s):
- Variation through mutation, meiosis, fertilisation; competition, predation.

- Investigate evidence of changing complexity/diversity over geological timescales (fossil record)
- Identify and discuss Aboriginal and Torres Strait Islander artwork indicating changes in plants/animals (including megafauna)
- Discuss how scientists developed/refined theory of evolution and why understanding origins of species is important

Genetics and evolutionary change in context
- Use an ethical framework to construct evidence-based arguments about genetic technology implications

Example(s):
- CRISPR genetic engineering debate using Nuremberg Code/Helsinki Declaration frameworks.

Reactions (Stage 5)

Outcomes
A student:
- describes a range of reaction types SC5-RXN-01
- explains the factors that affect the rate of chemical reactions SC5-RXN-02
- selects and uses scientific tools and instruments for accurate observations SC5-WS-01
- develops questions and hypotheses for scientific investigation SC5-WS-02
- designs safe, ethical, valid and reliable investigations SC5-WS-03
- follows a planned procedure to undertake safe, ethical, valid and reliable investigations SC5-WS-04

Related Life Skills outcomes: SCLS-RXN-01, SCLS-WS-01, SCLS-WS-02, SCLS-WS-03, SCLS-WS-04

Content

Law of conservation of mass
- Explain meaning of conservation of mass
- Conduct practical investigation to demonstrate mass conservation

Example(s):
- Ethanoic acid + sodium bicarbonate in a ballooned flask; copper + silver nitrate.

- Investigate/explain how mass is conserved in closed systems

Chemical reactions
- Use IUPAC naming to construct formulas of common ionic/covalent compounds
- Represent reactions by predicting products and writing word/balanced equations with states

Example(s):
- Sodium + chlorine → sodium chloride; using activity series/solubility tables.

- Model simple reactions to show atoms rearranged, mass conserved
- Determine features of synthesis, decomposition, displacement, neutralisation reactions
- Identify pH as measure of acidity, compare pH of substances to pure water
- Use pH indicators/meters to measure pH change in neutralisation reactions

Example(s):
- Phenolphthalein, methyl orange, universal indicator, natural indicators like red cabbage.

Rate of chemical reactions
- Investigate/explain how concentration, surface area, temperature, catalysts affect reaction rate

Example(s):
- Effervescent tablets: whole vs crushed; changing concentration or temperature.

- Conduct an investigation with a measurable hypothesis predicting changes to reaction rate, graph results in a scientific report

Nuclear reactions
- Outline how first elements were formed after Big Bang
- Describe conditions causing unstable nuclei
- Represent alpha/beta reactions as nuclear reactions
- Identify half-life of radioactive isotope
- Evaluate societal benefits/considerations of radioisotope use in medicine, industry, environmental monitoring
- Describe nuclear fission/fusion
- Outline environmental impacts of nuclear reactions (raw materials, waste)

Reactions in context
- Investigate a chemical/nuclear reaction used in industry to produce an important product

Example(s):
- Polymers, aspirin, sulfuric acid, medical isotopes, ammonia.

Waves and motion (Stage 5)

Outcomes

A student:
- describes the features and applications of different forms of waves SC5-WAM-01

- explains the motion of objects using Newton's laws of motion SC5-WAM-02
- follows a planned procedure to undertake safe, ethical, valid and reliable investigations SC5-WS-04
- selects and uses a range of tools to process and represent data SC5-WS-05

Related Life Skills outcomes: SCLS-WAM-01, SCLS-WS-04, SCLS-WS-05

Content

Waves
- Demonstrate mechanical waves need a medium, EM waves do not
- Use wave model to explain energy transfer without net particle transfer
- Compare transverse/longitudinal waves
- Compare different EM waves in the spectrum
- Investigate wave features (amplitude, frequency, speed, wavelength)
- Use $\lambda = v/f$ to explain relationships
- Analyse data to compare uses of EM waves based on properties

Example(s):
- EM waves in medicine, sanitation, communication.

Sound waves
- Model sound as compressions/rarefactions
- Investigate how amplitude/frequency affect pitch/volume
- Investigate Doppler effect
- Describe how ear responds to sound
- Investigate impact of material selection on Aboriginal and Torres Strait Islander musical instruments
- Describe how sound waves are used in medical diagnosis

Example(s):
- Ultrasound for internal structure imaging.

Light waves
- Describe how eye responds to light
- Investigate absorption, reflection, refraction, scattering of light
- Investigate everyday applications of absorption, reflection, refraction
- Explain how EM spectrum is used to learn about stars

Example(s):
- Star color indicates surface temperature.

Motion
- Conduct investigations to analyse relationships between distance, time, speed, displacement, velocity

- Represent motion using diagrams
- Conduct investigations to analyse relationship between distance, time, speed, graph results
- Conduct investigation to analyse relationship between force, mass, acceleration
- Investigate applications of Newton's laws of motion
- Determine net force on an object in one dimension using vector analysis
- Use mathematical representations ($F=ma$, $v_{av} = \Delta s/\Delta t$, $a=\Delta v/\Delta t$) to relate force, distance, time, speed, displacement, acceleration, velocity, mass

Waves and motion in context
- Structure an argument to analyse how waves and motion have changed society

Example(s):
- Rockets launch satellites → mobile phones, GPS; radio telescopes, optical fibers for communications.

Data science 2 (Stage 5)

Outcomes
A student:
- assesses the use of scientific knowledge and data in evidence-based decisions and when verifying the legitimacy of claims SC5-DA2-01
- analyses data from investigations to identify trends, patterns and relationships, and draws conclusions SC5-WS-06
- selects suitable problem-solving strategies and evaluates proposed solutions to identified problems SC5-WS-07
- communicates scientific arguments with evidence SC5-WS-08

Related Life Skills outcomes: SCLS-DAS-01, SCLS-WS-06, SCLS-WS-07, SCLS-WS-08

Content

Data science context: Can align to interests or environment.

Investigating questions and claims
- Discuss features of investigable vs. non-investigable questions
- Investigate how scientific knowledge is verified (peer review)
- Develop criteria to evaluate online content validity/reliability
- Identify a claim that can be tested scientifically
- Explain evidence/reasoning used to support conclusions, using data
- Conduct a written scientific argument showing evidence supporting a claim

Pseudoscience
- Explain difference between science and pseudoscience
- Identify pseudoscientific claims

Example(s):
- Astrology, cryptozoology, flat-Earth theory, dowsing.

- Investigate pseudoscience in popular media
- Investigate how data can be distorted to manipulate findings
- Determine if a claim/theory is pseudoscientific

Large datasets and scientific argumentation
- Outline features, collection, uses of large datasets
- Use large datasets to develop/test a question
- Conduct descriptive analysis of a large dataset
- Identify benefits of descriptive statistical analysis
- Conduct univariate and bivariate analyses using large datasets

Example(s):
- Univariate: measuring height; Bivariate: ice cream sales vs. temperature.

- Recognise difference between causal and correlational relationships
- Explore role of large datasets in validating scientific findings

Example(s):
- Mendel's pea experiments; Vera Rubin's dark matter discovery; global climate models.

Data science 2 in context
- Use data to make evidence-based decisions about a familiar issue and assess implications

Assessment

The primary role of assessment is to establish where students are in their learning so that teaching can be differentiated and further learning progress can be monitored over time. It provides information that assists teachers to target their teaching at the point of student need. Assessment is most effective when it is an integral part of teaching and learning programs.

Assessment involves:

- establishing where students are in their learning
- ongoing monitoring
- formative and summative tasks
- providing feedback about student progress.

Common Grade Scale

Stage 1, Stage 2, Stage 3, Stage 4, Stage 5

The [common grade scale{.underline}](https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/understanding-the-curriculum/awarding-grades/common-grade-scale) can be used to report student achievement in both primary and junior secondary years in all NSW schools.

Course performance descriptors

Stage 5 - Year 10

Course performance descriptors provide holistic descriptions of typical achievement at different grade levels in a specific course. They are used to identify and report a student's level of achievement in a Board Developed Course at the end of Stage 5.

Grade A

A student performing at this grade typically:

- demonstrates extensive knowledge and understanding of scientific models, theories and laws
- applies extensive knowledge and understanding of the nature, use and practice of science in a range of contexts
- identifies and develops valid scientific hypotheses and questions to make evidence-based predictions
- designs appropriate, safe, ethical, valid and reliable scientific investigations and effectively follows plans to conduct investigations
- analyses data and synthesises information to draw evidence-based scientific conclusions about trends, patterns and relationships
- selects and applies a range of suitable problem-solving strategies and evaluates and compares proposed solutions to scientific problems
- communicates comprehensive scientific ideas and arguments using relevant scientific evidence, language and terminology appropriate to audience and purpose.

Grade B

A student performing at this grade typically:

- demonstrates thorough knowledge and understanding of scientific models, theories and laws

- applies thorough knowledge and understanding of the nature, use and practice of science in a range of contexts
- identifies and develops scientific hypotheses and questions to make logical predictions
- designs appropriate, safe, ethical, valid and reliable scientific investigations and follows plans to conduct investigations
- analyses data to draw evidence-based scientific conclusions about trends, patterns and relationships
- selects and applies a range of suitable problem-solving strategies and evaluates proposed solutions to scientific problems
- communicates scientific ideas and arguments using relevant scientific evidence, language and terminology appropriate to audience and purpose.

Grade C

A student performing at this grade typically:

- demonstrates sound knowledge and understanding of scientific models, theories and laws
- applies sound knowledge and understanding of the nature, use and practice of science in a range of contexts
- identifies and proposes scientific hypotheses and questions to make predictions
- designs safe, ethical and valid scientific investigations and follows plans to conduct investigations
- examines and uses data to draw scientific conclusions about trends, patterns and relationships
- selects and uses problem-solving strategies and evaluates proposed solutions to scientific problems
- communicates scientific ideas and arguments using scientific evidence, language and terminology appropriate to audience and/or purpose.

Grade D

A student performing at this grade typically:

- demonstrates basic knowledge and understanding of scientific models and/or theories and/or laws
- demonstrates basic knowledge and understanding of the use and practice of science
- asks scientific questions and makes predictions

- follows plans to conduct safe, ethical and valid scientific investigations
- outlines data to identify trends and/or patterns and/or relationships
- uses strategies to make observations about scientific problems
- communicates scientific ideas using some scientific language and terminology.

Grade E

A student performing at this grade typically:

- demonstrates elementary knowledge and/or understanding of some scientific principles or uses of science
- asks questions and/or identifies predictions
- conducts elements of safe and ethical scientific investigations
- identifies trends, patterns or relationships
- makes observations about given scientific problems
- communicates some scientific information.

Assessment of Life Skills outcomes

Stage 4, Stage 5

The syllabus outcomes and content form the basis of learning opportunities for students. Through the [[collaborative curriculum planning process]{.underline}](https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/diversity-in-learning/special-education/collaborative-curriculum-planning), teachers select specific Life Skills outcomes which are based on the needs, strengths, goals, interests and prior learning of each student. Students are required to demonstrate achievement of one or more Life Skills outcomes.

Assessment should provide opportunities for students to demonstrate achievement in relation to the selected outcomes. Assessment can occur in a range of situations or environments such as the school and wider community. Evidence of achievement can be based on:

- [[formative]{.underline}](https://curriculum.nsw.edu.au/assessment-and-reporting/formative-assessment) assessment opportunities

- [[summative]{.underline}](https://curriculum.nsw.edu.au/assessment-and-reporting/summative-assessment)
  assessment opportunities.

There is no requirement for formal assessment of Life Skills outcomes.
Stage 6 Life Skills courses do not have external examinations or
mandatory projects.

Learning Outcomes

Below is a list of all learning outcomes referenced. Each outcome in the document links here.

Stage 4 Outcomes

- SC4-WS-01: Uses scientific tools and instruments for observations
- SC4-WS-02: Identifies questions and makes predictions to guide scientific investigations
- SC4-WS-03: Plans safe and valid investigations
- SC4-WS-04: Follows a planned procedure to undertake safe and valid investigations
- SC4-WS-05: Uses a variety of ways to process and represent data
- SC4-WS-06: Uses data to identify trends, patterns and relationships, and draw conclusions
- SC4-WS-07: Identifies problem-solving strategies and proposes solutions
- SC4-WS-08: Communicates scientific concepts and ideas using a range of communication forms
- SC4-OTU-01: Explains how observations are used by scientists to increase knowledge and understanding of the Universe
- SC4-FOR-01: Describes the effects of forces in everyday contexts
- SC4-CLS-01: Describes unique features of cells and how structural features are used to classify organisms
- SC4-SOL-01: Explains how properties of substances enable separation in a range of techniques
- SC4-LIV-01: Describes the role, structure and function of a range of living systems and their components
- SC4-PRT-01: Explains how uses of elements and compounds are influenced by discoveries relating to their properties
- SC4-CHG-01: Explains how energy causes geological and chemical change
- SC4-DA1-01: Explains how data is used by scientists to model and predict scientific phenomena

Stage 5 Outcomes

- SC5-WS-01: Selects and uses scientific tools and instruments for accurate observations
- SC5-WS-02: Develops questions and hypotheses for scientific investigation

- SC5-WS-03: Designs safe, ethical, valid and reliable investigations
- SC5-WS-04: Follows a planned procedure to undertake safe, ethical, valid and reliable investigations
- SC5-WS-05: Selects and uses a range of tools to process and represent data
- SC5-WS-06: Analyses data from investigations to identify trends, patterns and relationships, and draws conclusions
- SC5-WS-07: Selects suitable problem-solving strategies and evaluates proposed solutions to identified problems
- SC5-WS-08: Communicates scientific arguments with evidence, using scientific language and terminology
- SC5-DA2-01: Assesses the use of scientific knowledge and data in evidence-based decisions and when verifying claims
- SC5-EGY-01: Evaluates current and alternative energy use based on ethical and sustainability considerations
- SC5-DIS-01: Explains how understanding of the causes of disease can be used to prevent and manage spread of disease
- SC5-MAT-01: Assesses uses of materials based on their physical and chemical properties
- SC5-ENV-01: Analyses the impact of human activity on the natural world
- SC5-GEV-01: Describes the relationship between the diversity of living things and the theory of evolution
- SC5-GEV-02: Explains how DNA is responsible for transmission of heritable characteristics and can be manipulated
- SC5-RXN-01: Describes a range of reaction types
- SC5-RXN-02: Explains factors that affect the rate of chemical reactions
- SC5-WAM-01: Describes the features and applications of different forms of waves
- SC5-WAM-02: Explains the motion of objects using Newton's laws of motion