# Australian Curriculum: Science — Year 7

| CURRICULUM | SEMESTER 1 | | SEMESTER 2 | |
|---|---|---|---|---|
| | **Unit 1** | **Unit 2** | **Unit 3** | **Unit 4** |
| **Unit name** | Water | Movement and Machines | Human Impacts and Food Webs | Seasons, Tides and Heavenly Bodies. |
| **Unit description** | In this unit, students will consider the importance of water and the water cycle. They distinguish between mixtures, including solutions, and pure substances. Students compare a range of separation techniques and assess which techniques can be used for specific purposes. They consider everyday applications of the separation techniques including those used by different cultures and relate use of different separation techniques to a variety of occupations. Students will plan and conduct investigations into the separation of mixtures then use their data to evaluate the effectiveness of different techniques and draw conclusions. These understandings will be applied in Unit 2 through other applications to their community. Students consider the importance of sustainable, clean water in the community. They explore Aboriginal peoples' and Torres Strait Islander peoples' values about water. They investigate the application of separation techniques in water treatment and recycling processes, and compare and contrast artificial treatment processes with the water cycle to understand how humans have impacted on and mimic natural processes. Students consider ways in which science understanding contributes to the development of water management processes to produce sustainable, clean water supplies, both locally and in developing countries. They conduct a water audit for the home and school and suggest ways to manage water use. They also calculate their own water footprint. | In this unit, students build on their knowledge from Year 4 of how forces affect motion. They develop understandings of balanced and unbalanced forces and apply these to predict and justify conclusions about changes in motion. Students explore the effects of gravitational force on motion and consider the difference between mass and weight. They analyse forces involved in simple machines to understand mechanical advantage. Students consider how people use understandings of force and motion in their occupations, and how science and technology have contributed to solving problems in the community through the development of simple machines. Students identify questions or problems, and plan and conduct investigations related to forces and motion, selecting appropriate equipment, ensuring fair testing and following safety guidelines. They summarise and use data to identify relationships and draw conclusions. Students evaluate the quality of the data, and reflect on experimental methods to identify improvements. They communicate using scientific terminology and representations including force diagrams They will apply their understanding of fair testing to construct, test, and modify a balloon-powered vehicle and analyse the forces acting on the vehicle. Students will build on their understanding of simple machines to examine how changes to levers and pulley systems affect forces within more complex systems. They will investigate the application of scientific understanding of force and motion in transport systems and consider how scientific and technological developments have improved vehicular safety. | In this unit, students classify organisms based on their physical characteristics. They apply scientific conventions to construct and use dichotomous keys to assist and describe classification. Students analyse the effectiveness of dichotomous keys and suggest improvements. They explore how improvements in microscope technology led to changes in classification systems. Students consider how and why classification systems are used in a variety of occupations. They explore feeding relationships between organisms in an environment using food chains and food webs, and construct representations of these relationships using second-hand data. Students will apply their understandings from this unit and will investigate how a range of environmental changes and human activities can impact food webs in different ecosystems. Students will explore native food webs and consider how these are understood and used by Aboriginal peoples and Torres Strait Islander peoples. They will examine how a range of human activities can impact on marine environments and explore the work of scientists and other occupations working in Antarctica. | In this unit, students will explore the relationship between the tilt of Earth on its axis, its rotation and revolution around the sun, and seasons. They will understand that different environmental factors define the seasons for different cultures. Students will also examine the relationship between the angle of Earth's tilt and the intensity of the sunlight hitting Earth. They will examine data about weather and climate from different sources. Students will understand that the behaviour and appearance of plants and animals and the activity and practices of humans change in response to seasonal changes. They will explore how science understanding influences the development of practices within agriculture and the Sun, Moon and Seasons. Students will understand the relative positions of Earth, the moon and the sun in space. Students will describe the rotations and orbits of Earth and the moon relative to the sun. Students will understand that science knowledge changes with new evidence and they will identify how the positions of Earth, the moon and the sun cause different predictable phenomena such as eclipses, tides, phases of the moon and solar phenomena. Students will explore and compare cultural beliefs related to phases of the moon, eclipses and solar phenomena. Students will examine how science and technology have contributed to understanding solar storms and reducing their effects on Earth. |

| ASSESSMENT | | SEMESTER 1 | | SEMESTER 2 | |
|---|---|---|---|---|---|
| | | **Summative assessment task 1** | **Summative assessment task 2** | **Summative assessment task 3** | **Summative assessment task 4** |
| **Range and balance of summative assessment conventions** | **Technique** | Separating Mixtures Investigation | Forces Exam | Classifying creatures Test | Causing Seasons Research Task |
| | **Type of text** | Scientific Report | Short and extended response | Extended response and problem solving | Multi-Modal Student Respons |
| | **Mode** | Experimenting and Scientific written report | Student Response to In class Exam | Extended student response to in class exam | Poster/Video/Report etc |
| | **Conditions** | Laboratory Equipment and Laptop | 1 x 70 min lesson | 2 x 70 min lesson | Multiple weeks- In Class and at home weeks |

| **Aspects of the achievement standard** | | | | | | | |
|---|---|---|---|---|---|---|---|
| Students describe techniques to separate pure substances from mixtures | | | | | | | |
| They represent and predict the effects of unbalanced forces, including Earth's gravity, on motion | | | | | | | |
| They explain how the relative positions of Earth, the sun and moon affect phenomena on Earth | | | | | | | |
| They analyse how the sustainable use of resources depends on the way they are formed and cycle through Earth | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| systems | | | | | | | | |
| They predict the effect of human and environmental changes on interactions between organisms and classify and organise diverse organisms based on observable differences | | | | | | | | |
| Students describe situations where scientific knowledge from different science disciplines and diverse cultures has been used to solve a real-world problem. | | | | | | | | |
| They explain possible implications of the solution for different groups in society | | | | | | | | |
| | | | | | | | | |
| Students identify questions that can be investigated scientifically | | | | | | | | |
| They plan fair experimental methods, identifying variables to be changed and measured. | | | | | | | | |
| They select equipment that improves fairness and accuracy and describe how they considered safety | | | | | | | | |
| Students draw on evidence to support their conclusions | | | | | | | | |
| They summarise data from different sources, describe trends and refer to the quality of their data when suggesting improvements to their methods | | | | | | | | |
| They communicate their ideas, methods and findings using scientific language and appropriate representations | | | | | | | | |

Shaded cells indicate opportunities that summative assessments provide for students to demonstrate evidence against all aspects of the achievement standard