Science and technology K-6 sample scope and sequence

## Year-level based

### Year 3 and Year 4

#### Term 1 – material world

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|  | Year 3 | Year 4 |
| Content focus | Students investigate how different properties of materials affect their suitability for products. They have the opportunity to develop a design solution to an identified need or opportunity, using a variety of materials. | Students focus on how solids and liquids change state and the properties of natural and processed materials. They have the opportunity to develop a design solution to an identified need or opportunity, using a variety of materials. |
| Focus or inquiry questions | How do you decide upon which material to use for a particular purpose? | How do materials change when heated and cooled? |
| Skills outcomes | Working scientifically ST2-1WS-S – questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  Design and production ST2-2DP-T – selects and uses materials, tools and equipment to develop solutions for a need or opportunity. | Working scientifically ST2-1WS-S – questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  Design and production ST2-2DP-T – selects and uses materials, tools and equipment to develop solutions for a need or opportunity |
| Knowledge and understanding outcomes | Material world ST2-7MW-T – investigates the suitability of natural and processed materials for a range of purposes | Material world ST2-6MW-S – describes how adding or removing heat causes a change of state |

#### Term 2 – living world and digital technologies

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|  | Year 3 | Year 4 |
| Content focus | Students learn about classification, life cycles and survival of living things. They produce a product or system to support the growth of a plant and/or animal and use digital technologies to represent and analyse data. | Students learn about the agricultural processes used to grow plants and raise animals. They produce a product or system to support the growth of a plant and/or animal. They describe and follow algorithms to solve problems. |
| Focus or inquiry questions | How can we group living things?  What are the similarities and differences between the life cycles of living things?  How do we represent data in different ways? | How are environments and living things interdependent?  How do we create food and fibre products from animals and plants?  How are algorithms used to develop digital systems? |
| Skills outcomes | Working scientifically ST2-1WS-S – questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  Design and production ST2-2DP-T – selects and uses materials, tools and equipment to develop solutions for a need or opportunity  Design and production ST2-3DP-T – defines problems, describes and follows algorithms to develop solutions | Working scientifically ST2-1WS-S – questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  Design and production ST2-2DP-T – selects and uses materials, tools and equipment to develop solutions for a need or opportunity  Design and production ST2-3DP-T – defines problems, describes and follows algorithms to develop solutions |
| Knowledge and understanding outcomes | Living world ST2-4LW-S – compares features and characteristics of living and non-living things  Digital technologies ST2-11DI-T – describes how digital systems represent and transmit data | Living world ST2-5LW-T – describes how agricultural processes are used to grow plants and raise animals for food, clothing and shelter.  Digital technologies ST2-11DI-T – describes how digital systems represent and transmit data. |

#### Term 3 – physical world

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|  | Year 3 | Year 4 |
| Content focus | Students investigate how contact and non-contact forces affect the behaviour of objects. Students observe how forces are used in the manufacture of products and in systems. | Students investigate light, heat and electrical energy and develop their understanding of energy as a resource that can be generated and transferred. They learn about the interdependent relationship between energy and forces that affects the behaviour of objects. |
| Focus or inquiry questions | How can objects affect other objects with or without touching them?  How can we use forces in a product or system? | How do light, heat and electrical energy make things happen?  How can we use forces and energy in a product or system? |
| Skills outcomes | Working scientifically ST2-1WS-S – questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  Design and production ST2-2DP-T – selects and uses materials, tools and equipment to develop solutions for a need or opportunity. | Working scientifically ST2-1WS-S – questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  Design and production ST2-2DP-T – selects and uses materials, tools and equipment to develop solutions for a need or opportunity |
| Knowledge and understanding outcomes | Physical world ST2-9PW-ST – describes how contact and non-contact forces affect an object’s motion | Physical world ST2-8PW-ST – describes the characteristics and effects of common forms of energy, such as light and heat. |

#### Term 4 – Earth and space and digital technologies

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|  | Year 3 | Year 4 |
| Content focus | Students explore the effect of the interactions between the Earth and the Sun. They design and produce a digital solution to communicate their findings using a visual programming language. | Students focus on the Earth’s surface and how it changes over time. They investigate natural processes and human activity in order to develop a view in relation to sustainable practices. They investigate how digital systems transmit data and use digital technologies to analyse and data. |
| Focus or inquiry questions | What occurs as a result of the interactions between the Earth and the Sun?  How are algorithms used to develop digital systems? | How do natural processes and human actions change the Earth’s surface over time?  How do digital systems share information and instructions?  Why do we represent data in different ways? |
| Skills outcomes | Working scientifically ST2-1WS-S – questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  Design and production ST2-3DP-T – defines problems, describes and follows algorithms to develop solutions | Working scientifically ST2-1WS-S – questions, plans and conducts scientific investigations, collects and summarises data and communicates using scientific representations  Design and production ST2-2DP-T – selects and uses materials, tools and equipment to develop solutions for a need or opportunity |
| Knowledge and understanding outcomes | Earth and space ST2-10ES-S – investigates regular changes caused by interactions between the Earth and the Sun, and changes to the Earth’s surface  Digital technologies ST2-11DI-T – describes how digital systems represent and transmit data | Earth and space ST2-10ES-S – investigates regular changes caused by interactions between the Earth and the Sun, and changes to the Earth’s surface  Digital technologies ST2-11DI-T – describes how digital systems represent and transmit data |

[Science and Technology K-6 Syllabus (2017)](https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/learning-areas/science/science-and-technology-k-6-new-syllabus) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales.