Science and technology K-6 sample scope and sequence

## Year-level based

### Year 5 and Year 6

#### Term 1 – material world

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|  | Year 5 | Year 6 |
| Content overview | Students investigate the different properties of solids, liquids and gases and how material combinations and heat can affect the properties and behaviour of materials. | Students investigate how the properties of a range of materials and the way in which they are combined, determine their use and inform design solutions. |
| Focus or inquiry questions | How can the state of materials be changed and manipulated?  What is the result of combining materials? | Why are the characteristics of materials important when designing and producing? |
| Skills outcomes | Working scientifically ST3-1WS-S – plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions | Working scientifically ST3-1WS-S – plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions  Design and production ST3-2DP-T – plans and uses materials, tools and equipment to develop solutions for a need or opportunity |
| Knowledge and understanding outcomes | Material world ST3-6MW-S – explains the effect of heat on the properties and behaviour of materials | Material world ST3-7MW-T – explains how the properties of materials determine their use for a range of purposes |

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

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|  | Year 5 | Year 6 |
| Content overview | Students investigate how and why food and fibre are produced in sustainable, managed environments that enable people to grow and be healthy. Students design, modify and follow algorithms involving branching and iteration to represent processes involved in the production of food and fibre products. | Students investigate the growth and survival of living things and how their adaptations over time suit their environment. They learn about how digital technologies can be used to gather and transmit data related to the growth and survival of living things. |
| Focus or inquiry questions | Why is it important for food and fibre to be produced sustainably?  How do we represent decision making in an algorithm? | How do physical conditions affect the survival of living things?  How do the structural and behavioural features of living things support survival?  How do components of digital systems interact with each other to transmit data? |
| Skills outcomes | Working scientifically ST3-1WS-S – plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions  Design and production ST3-2DP-T – plans and uses materials, tools and equipment to develop solutions for a need or opportunity  Design and production ST3-3DP-T – defines problems, and designs, modifies and follows algorithms to develop solutions | Working scientifically ST3-1WS-S – plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions  Design and production ST3-3DP-T – defines problems, and designs, modifies and follows algorithms to develop solutions |
| Knowledge and understanding outcomes | Living world ST3-5LW-T – explains how food and fibre are produced sustainably in managed environments for health and nutrition  Digital technologies ST3-11DI-T – explains how digital systems represent data, connect together to form networks and transmit data | Living world ST3-4LW-S – examines how the environment affects the growth, survival and adaptation of living thing  Digital technologies ST3-11DI-T – explains how digital systems represent data, connect together to form networks and transmit data |

#### Term 3 – physical world and digital technologies

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|  | Year 5 | Year 6 |
| Content overview | Students investigate the difference between contact and non-contact forces and the effects of making forces stronger or weaker. They use digital technologies to collect and visualise data. | Students investigate how energy can be transformed from one form to another and how electrical energy can control movement in products and systems. They explore how digital systems form networks and transmit data. They design, test and evaluate a product or system that demonstrates energy transformation. |
| Focus or inquiry questions | How can we make a force stronger or weaker?  How do components of digital systems interact with each other to transmit data? | What types of energy transformations can be observed?  How can electricity be used in a product or system?  How do components of digital systems connect together to form networks? |
| Skills outcomes | Working scientifically ST3-1WS-S – plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions  Design and production ST3-2DP-T – plans and uses materials, tools and equipment to develop solutions for a need or opportunity | Working scientifically ST3-1WS-S – plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions  Design and production ST3-2DP-T – plans and uses materials, tools and equipment to develop solutions for a need or opportunity  Design and production ST3-3DP-T – defines problems, and designs, modifies and follows algorithms to develop solutions |
| Knowledge and understanding outcomes | Physical world ST3-9PW-ST – investigates the effects of increasing or decreasing the strength of a specific contact or non-contact force  Digital technologies ST3-11DI-T – explains how digital systems represent data, connect together to form networks and transmit data | Physical world ST3-8PW-ST – explains how energy is transformed from one form to another  Digital technologies ST3-11DI-T – explains how digital systems represent data, connect together to form networks and transmit data |

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

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|  | Year 5 | Year 6 |
| Content overview | Students investigate the Earth’s place in the solar system and how components of digital systems interact with each other, transmit data and form networks. | Students explore changes on Earth’s surface caused by natural disasters and the exploration of how these may be mitigated. They investigate the role digital systems play in these events by processing and representing data. |
| Focus or inquiry questions | How does the Earth compare to other planets in the solar system?  How do components of digital systems interact with each other to transmit data?  How do the components of digital systems connect to form networks? | How do sudden geological changes and extreme weather events affect the Earth’s surface?  How do components of digital systems interact with each other to transmit data? |
| Skills outcomes | Working scientifically ST3-1WS-S – plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions  Design and production ST3-3DP-T – defines problems, and designs, modifies and follows algorithms to develop solutions | Working scientifically ST3-1WS-S – plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions  Design and production ST3-3DP-T – defines problems, and designs, modifies and follows algorithms to develop solutions |
| Knowledge and understanding outcomes | Earth and space ST3-10ES-S – explains regular events in the solar system and geological events on the Earth’s surface  Digital technologies ST3-11DI-T – explains how digital systems represent data, connect together to form networks and transmit data | Earth and space ST3-10ES-S – explains regular events in the solar system and geological events on the Earth’s surface  Digital technologies ST3-11DI-T – explains how digital systems represent data, connect together to form networks 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.