**AUSVELS : Australian SCIENCE Curriculum, F-10:**

**Overarching ideas:** Patterns, order & organization; Form and function; Stability and change; Scale and Measurement; Matter and energy; Systems

There are **three strands** which are to be taught in an integrated way. The order & detail in which content descriptions are organized in to learning programs are decisions to be made by the teacher.

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| **Science Understanding** – content described by year level | **Science as Human Endeavour** – content described in 2 year bands | **Science Inquiry Skills** – content described in 2 year bands |
| **Sub strands:**  Biological sciences  Chemical sciences  Earth and Space sciences  Physical sciences | **Sub strands:**  Nature and development of science  Use and influence of science | **Sub strands:**  Questioning and predicting  Planning and conducting  Processing and analysing data and information  Evaluating  Communicating |

**Year/Level 4 SCIENCE Students:**

* Broaden understanding of classification, and form and function through and exploration of the properties of natural and process materials.
* Learn that forces include non-contact forces and that some interactions result from phenomena that can’t be seen with the naked eye.
* Begin to appreciate that current systems, such as the Earth’s surface, have characteristics that have resulted from past changes & that living things form part of systems.
* Understand that some systems change in predictable ways, such as through cycles.
* Apply knowledge to make predictions based on interactions within systems, including those involving the actions of humans.

\*This document intends to assist teachers in their implementation of the Australian curriculum through AUSVELS– it combines description and elaboration statements. The blue elaborations are examples of how the learning can be achieved; not a list of tasks that have to be done. Teachers are advised to consult the online documentation to clarify further detail for themselves. The ‘AusVELS’ is the official documentation for Victorian schools.

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| **Science understanding:** | **Science as Human Endeavour:** | **Science Inquiry Skills:** |
| **Biological sciences:**  Living things have life cycles (ACSSU072)     * making and recording observations of living things as they develop through their life cycles * describing stages of life cycles of different living things such as insects, birds, frogs and flowering plants * comparing life cycles of animals and plants * recognising that environmental factors can affect life cycles such as fire and seed germination   Living things, including plants and animals, depend on each other and the environment to survive (ACSSU073)     * investigating how plants provide shelter for animals * investigating the roles of living things in a habitat, for instance producers, consumers or decomposers * observing and describing predator –prey relationships * predicting the effects when living things in feeding relationships are removed or die out in an area * recognising that interactions between living things may be competitive or mutually beneficial   **Chemical sciences:**  Natural and processed materials have a range of physical properties; These properties can influence their use (ACSSU074)     * describing a range of common materials, such as metals and plastics, and their use * investigating a particular property across a range of materials * selecting materials for uses based on their properties * considering how the properties of materials affect the management of waste or can lead to pollution   **Earth and space sciences:**  Earth’s surface changes over time as a result of natural processes and human activity (ACSSU075)  **ã**   * collecting evidence of change from local landforms, rocks and fossils * exploring a local area that has changed as a result of natural processes, such as an eroded gully, sand dunes or river banks * investigating the characteristics of soil * considering how different human activities cause erosion of the Earth’s surface * considering the effect of events such as floods and extreme weather on the landscape, both in Australia and the Asia region   **Physical sciences:**  Forces can be exerted by one object on another through direct contact or from a distance (ACSSU076)   * observing qualitatively how speed is affected by the size of a force * exploring how non-contact forces are similar to contact forces in terms of objects pushing and pulling another object * comparing and contrasting the effect of friction on different surfaces, such as tyres and shoes on a range of surfaces * investigating the effect of forces on the behaviour of an object through actions such as throwing, dropping, bouncing and rolling * exploring the forces of attraction and repulsion between magnets | **Nature & development of Science:**  Science involves making predictions and describing patterns and relationships (ACSHE061)     * exploring ways in which scientists gather evidence for their ideas and develop explanations * considering how scientific practices such as sorting, classification and estimation are used by Aboriginal and Torres Strait Islander people in everyday life   **Use & influence of science:**  Science knowledge helps people to understand the effect of their actions (ACSHE062)     * investigating how a range of people, such as clothing designers, builders or engineers use science to select the appropriate materials for their work * considering methods of waste management and how they can affect the environment * exploring how science has contributed to a discussion about an issue such as loss of habitat for living things or how human activity has changed the local environment * considering how to minimise the effects of erosion caused by human activity | **Questioning & predicting:**  With guidance, identify questions in familiar contexts that can be investigated scientifically and predict what might happen based on prior knowledge (ACSIS064)   * considering familiar situations in order to think about possible areas for investigation * reflecting on familiar situations to make predictions with teacher guidance * choosing questions to investigate from a list of possibilities   **Planning & conducting:**  Suggest ways to plan and conduct investigations to find answers to questions (ACSIS065)   * exploring different ways to conduct investigations and connecting these to the types of questions asked with teacher guidance * working in groups, with teacher guidance, to plan ways to investigate questions   Safely use appropriate materials, tools or equipment to make and record observations, using formal measurements and digital technologies as appropriate (ACSIS066)   * discussing and recording safety rules for equipment as a whole class * making and recording measurements using familiar formal units and appropriate abbreviations such as, seconds (s), grams (g), centimetres (cm) and millilitres (mL)   **Processing & analyzing data & information:**  Use a range of methods including tables and simple column graphs to represent data and to identify patterns and trends (ACSIS068)   * indentifying and discussing numerical and visual patterns in data collected from students’ investigations and from other sources * using provided graphic organisers to sort and represent information * discussing with teacher guidance which graphic organiser will be most useful in sorting and organising data arising from investigations   Compare results with predictions, suggesting possible reasons for findings (ACSIS216)   * discussing how well predictions matched results from an investigation and proposing reasons for these findings * comparing, in small groups, proposed reasons for findings and explaining their reasoning   **Evaluating:**  Reflect on the investigation; including whether a test was fair or not (ACSIS069)   * 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 * discussing which aspects of the investigation helped improve fairness, and any aspects that weren’t fair   **Communicating:**  Represent and communicate ideas and findings in a variety of ways such as diagrams, physical representations and simple reports (ACSIS071)   * communicating with other students carrying out similar investigations to share experiences and improve investigation skills * using simple explanations and arguments, reports or graphical representation to communicate idea to other students |
| **Level 4 Achievement Standard:**  By the end of Level 4, students apply the observable properties of materials to explain how objects and materials can be used. They use contact and noncontact forces to describe interactions between objects. They discuss how natural and human processes cause changes to the Earth’s surface. They describe relationships that assist the survival of living things and sequence key stages in the life cycle of a plant or animal. They identify when science is used to ask questions and make predictions. They describe situations where science understanding can influence their own and others’ actions.  Students follow instructions to identify investigable questions about familiar contexts and predict likely outcomes from investigations. They discuss ways to conduct investigations and safely use equipment to make and record observations. They use provided tables and simple column graphs to organise their data and identify patterns in data. Students suggest explanations for observations and compare their findings with their predictions. They suggest reasons why their methods were fair or not. They complete simple reports to communicate their methods and findings. | | |

Cross-curriculum priorities to be included in all learning areas: Aboriginal and Torres Strait Islander histories and cultures (); Asia and Australia’s engagement with Australia (ã ); Sustainability ()

Reference : <http://ausvels.vcaa.vic.edu.au/> This grid is an adaption of the information from the VCAA site to create a visual representation to assist teachers.