**Structure of 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 7 SCIENCE Students:**

* Explore the diversity of life on Earth & develop their understanding of the role of classification.
* Use & develop models such as food chains, food webs & the water cycle to represent & analyse the flow of energy & matter through ecosystems & the impacts of changing components within them.
* Consider the interaction between multiple forces when explaining motion.
* Explore the notion of renewable and non-renewable resources & how this classification depends of the timescale considered.
* Investigate relationships in the Earth, sun, moon system & use models to predict & explain events.
* Make accurate measurements & control variables to analyse relationships between system components + explore & explain these through increasingly complex representations.

\*This document intends to assist teachers in their implementation of the Australian curriculum – it is merely an attempt to understand the document at this time – it combines description and elaboration statements. Teachers are advised to consult the online documentation to clarify further detail for themselves. The ‘AusVELS’ to be released during 2011 will be the official documentation for Victorian schools.

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| **Science understanding:** | **Science as Human Endeavour:** | **Science Inquiry Skills:** |
| **Biological sciences:**   * Differences within & between groups of organisms; classification helps organize this diversity – *consider reasons for classification; group organisms (similarities & differences); consider how classifications change over time; classify using hierarchical systems (kingdom, phylum, class, order, family, genus, species); use scientific conventions for naming species; use provided keys to identify organisms in local habitat* * Interactions between organisms can be described in terms of food chains & food webs; human activity can affect these – *use food chains to show relationships in a habitat; construct & interpret food webs to show relationships; classify according to position in food chain; investigate the effects of human activity on local habitats; explore how other living things can cause changes & impacts eg cane toads; research specific examples of human activity, eg use of fire by Aboriginal people*   **Chemical sciences:**   * Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques – *recognise differences between pure substances & mixtures + identify examples; identify solvents and solutes in solutions; investigate & use a range of separation techniques (filtration, decantation, evaporation, crystallization, chromatography & distillation); explore & compare separation techniques used in the home*   **Earth and space sciences:**   * Predictable phenomena on Earth, including seasons & eclipses, are caused by the relative positions of the sun, earth & moon – *investigate eg lunar & solar eclipses, seasons & phases of moon; compare times for rotations & orbits of the earth, sun & moon & their relative movements, including how eclipses & phases occur; explain why different regions of Earth experience different seasons* * Some of Earth’s resources are renewable, others are not – *what does renewable mean in relation to Earth resources; consider timescales for regeneration of resources; compare energy sources & how they are used in a range of situations* * Water is an important resource that cycles through the environment – *consider water cycle in terms of changes in the state of water; investigate affecting factors; explore how human management impacts on the water cycle*   **Physical sciences:**   * Change to an object’s motion is caused by unbalanced forces acting on the object – *investigate the effect of different forces on familiar objects; investigate balanced & unbalanced common situations eg stationary & falling objects; simple machines eg pulleys or levers* * Earth’s gravity pulls objects towards the centre of the earth – *explore how gravity affects objects on the Earth’s surface; consider how gravity keeps planets in orbit around the sun* | **Nature & development of Science:**   * Science changes as new evidence becomes available, & some discoveries significantly change people’s understanding of the world – *investigate how telescopes & space probes provide new evidence; research different ideas in using models of the solar system (Copernicus, Khayyam, Galileo); research developments in understanding astronomy (predicting eclipses, calculation of solar year by AlBattani in10th C)* * Science knowledge can develop through collaboration & connecting ideas across the disciplines of science – *considering how water use & management relies on varying scientific aspects & technology; identifying contributions of Australian scientists to human impact on environments & management projects; how land practices of Aboriginals & Torres Strait Islanders can inform sustainable management; study transnational collaborative research in the Antarctic; recognize how traditional & western scientific knowledge can be used to care for Country & Place*   **Use & influence of science:**   * Science & technology contribute to finding solutions to a range of contemporary issues, which may impact of other areas of society & involve ethical considerations – *eg. Seatbelts or safety helmets re knowledge of force & motion; water use & management issues, recycling, greywater, blackwater; how human activity can affect ecosystems; attempts to control the cane toad spread.* * Science understanding influences the development of practices in areas of human activity such as industry, agriculture, marine & terrestrial resource management – *everyday applications of filtering, sorting waste, reducing pollution, extracting products from plants, separating blood products, cleaning oil spills; water treatment in industrial & household systems; how Aboriginal & Torres Strait Islander knowledge is informing scientific decisions; scientific responses to rabbit plagues etc* * People use understanding & skills from across the disciplines of science in their occupations – *water management in farming, land management, gardening; separation techniques in food & wine industry; how seasonal changes affect agriculture; how sports science improves performance* | **Questioning & predicting:**   * Identify questions & problems that can be investigated scientifically & make predictions based on scientific knowledge – *work collaboratively to identify problems; use prior knowledge to predict results*   **Planning & conducting:**   * Collaboratively & individually plan & conduct a range of investigations types, including fieldwork & experiments, ensuring safety & ethical guidelines are followed – *develop strategies & techniques for effective research using secondary resources, including the internet; work in groups to decide how to approach an investigation* * In fair tests, measure & control variables, & select equipment to collect data with accuracy appropriate to the task – *recognise difference between controlled, dependent & independent variables; learn & apply safe equipment use skills & rules; use specialised equipment to increase accuracy of measurement; use digital camera to record observations & compare images*   **Processing & analyzing data & information:**   * Construct & use a range of representations, including graphs, keys & models to signal & analyse patterns or relationships, including digital methods – *spreadsheets to aid simple analysis; consider advantages & disadvantages of different depictions* * Summarise data, from own investigations & secondary sources, use scientific understanding to identify relationships & draw conclusions – *use diagrams to convey abstract ideas & simplify complex situations*   **Evaluating:**   * Reflect on the method used, including evaluating the quality of data & identify improvements in method – *discuss methods & evaluations; suggest improvements based on experience* * Use scientific knowledge & findings from investigations to evaluate claims – *identify where science is the basis of conclusions*   **Communicating:**   * Communicate ideas, findings & solutions to problems using scientific language & representations using digital technologies as appropriate – *access, communicate, collaborate, on & off site* |