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| **Applied Science - Science in Practice** **Rationale** | **NOTES** |
| Science is a dynamic, collaborative and future-focused field of human endeavour that has emerged from a need to understand natural phenomena. Studying science contributes to the development of a sense of wonder and engagement with the natural world. To have an informed voice in charting the future of society and to effectively participate in society and everyday life, where science and technology play significant and increasing roles, students need to be scientifically literate. Scientific literacy is a way of thinking and a way of viewing and interacting with the world that is developed through engaging in the practical and analytical approaches of scientific inquiry. Senior secondary students are able to ask increasingly sophisticated questions about new ideas and information. Science in Practice supports and focuses the development of these questions by encouraging inquiry and a respect for evidence and reasoning. It develops critical thinking skills through the evaluation of claims using systematic reasoning and an enhanced scientific understanding of the natural and physical world. Science in Practice is practical, with experiments and hands-on investigations at its heart. Practical activities engage students, producing excitement and curiosity. Investigations develop a deeper understanding of the nature of science and of a particular topic or context. They foster problem-solving skills that are transferable to new situations. The core of Science in Practice focuses on ‘Scientific literacy and working scientifically’, ‘Workplace health and safety’, and ‘Communication and self-management’. Science in Practice uses a contextualised approach, where modules of work deliver the core through electives — ‘Science for the workplace’, ‘Resources, energy and sustainability’, ‘Health and lifestyles’, ‘Environments’, and ‘Discovery and change’. Learning experiences within modules of work are interdisciplinary, including aspects of at least two science disciplines — Biology, Chemistry, Earth and Environmental Science and Physics. The objectives of the course ensure that students apply what they know and understand to plan investigations, analyse research and evaluate evidence. |  |
| **Core Topic 2: Workplace health and safety** |
| **Concepts and ideas** | **Knowledge, understanding and skills** |
| **Workplace safety** Workplace safety rules are required for working in a scientific area. | Workplace health and safety requirements and safe operational scientific procedures. |
| **Safe working procedures** Safe working procedures are essential when participating in scientific activities and taking precautions will reduce the potential of incidents and injuries. | Personal protection equipment (PPE). |
| Surroundings adapted to meet safety requirements.  |
| Precautions to prevent injury, e.g. when handling glass and/or hot objects. |
| **Core Topic 3: Communication and self-management** |
| **Concepts and ideas** | **Knowledge, understanding and skills** |
| **Communication** Participation in contemporary Australian society and work requires clear and appropriate oral and written communication. | Communication in a scientific context: * using scientific terminology.
* recording accurate and thorough data using appropriate formats.
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| Communication in a workplace: * using language for the workplace.
* following oral and written instruction and information.
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| **Self-management** Self-management skills are required in the workplace, laboratory and field. | Work with minimal supervision: * following safe work practices when carrying out procedures.
* recognising industry standards.
* applying work ethics.
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| Teamwork in the workplace: * communicating interpersonally.
* self-organising.
* persisting.
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| Organisation and preparation of materials and/or equipment for self and others. |
| **Elective: Science for the workplace** |
| **Focus** | The nature of work and the skills work requires, change rapidly. New skills in the workplace are in demand all the time; at the same time some skills are becoming obsolete. Employers argue that communication, teamwork, problem solving, initiative and enterprise, planning and organising, self-management, and learning and technology skills are as important as professional, paraprofessional and technical skills. Students should explore and develop an awareness of science as it operates in common or local workplaces. A module of work may be designed, which provides opportunities to apply scientific knowledge and skills to specific work roles and/or environments. This will depend on ease of access to community resources, local trades and industry, and the needs and interests of the students. |
| ***Content example*** | *Solve problems in specific contexts related to industries such as fashion design, hospitality, farming,* ***fisheries and agriculture****, sports science and recreation — using a scientific approach and skills that can be transferred across different career paths.* |
| **Elective: Environments** |
| **Focus** | Environments can be defined by their geology and ecology, their size, or whether they are natural or human-made. Students should understand that the management of environments relies on understanding their individual components, inherent interrelationships, and the impact of the human species on them. As part of, and determining factors in, the environment, human interactions with the Earth have a profound effect on present and future generations. Science can inform these complex global problems. |
| ***Content examples*** | *Research whether human activities are harming an ecosystem, e.g. a rainforest ecosystem, the fisheries of Moreton Bay or the Great Barrier Reef.* |
| *Ask how regulations are designed to counteract the impact of commercial and recreational fishing.* |
| *Undertake water quality testing.* |