

Curriculum Alignment Plan

FUELLING A HYDROGEN FUTURE: STEM SKILLS FOR SECONDARY LEARNING (YEAR 9)

This curriculum alignment plan for Fuelling a Hydrogen Future: STEM Skills for Secondary Learning is based on the Australian Curriculum, Assessment and Reporting Authority (ACARA) [Version 9.0](#) for Year 9.

LEARNING AREAS

- Science
- Design and Technologies
- Digital Technologies
- Economics and Business

SCIENCE CONTENT DESCRIPTORS

Physical sciences

- Apply the law of conservation of energy to analyse system efficiency in terms of energy inputs, outputs, transfers and transformations (AC9S9U05)

Chemical sciences

- Explain how the model of the atom changed following the discovery of electrons, protons and neutrons and describe how natural radioactive decay results in stable atoms (AC9S9U06)
- Model the rearrangement of atoms in chemical reactions using a range of representations, including word and simple balanced chemical equations, and use these to demonstrate the law of conservation of mass (AC9S9U07)

Nature and development of science

- Investigate how advances in technologies enable advances in science, and how science has contributed to developments in technologies and engineering (AC9S9H02)

Use and influence of science

- Analyse the key factors that contribute to science knowledge and practices being adopted more broadly by society (AC9S9H03)

Communicating

- Write and create texts to communicate ideas, findings and arguments effectively for identified purposes and audiences, including selection of appropriate content, language and text features, using digital tools as appropriate (AC9S9I08)

DESIGN AND TECHNOLOGIES CONTENT DESCRIPTORS

Technologies and society

- Analyse how people in design and technologies occupations consider ethical, security and sustainability factors to design and produce products, services and environments (AC9TDE10K01)
- Analyse the impact of innovation, enterprise and emerging technologies on designed solutions for global preferred futures (AC9TDE10K02)

Technologies context: Engineering principles and systems

- Analyse and make judgements on how the characteristics and properties of materials are combined with force, motion and energy to control engineered systems (AC9TDE10K03)

DIGITAL TECHNOLOGIES CONTENT DESCRIPTOR

Investigating and defining

- Define and decompose real-world problems with design criteria and by interviewing stakeholders to create user stories (AC9TDI10P04)

ECONOMICS AND BUSINESS CONTENT DESCRIPTOR

Interpreting and analysing

- Interpret information and data, explaining economic and business issues, trends and economic cause-and-effect relationships, and make predictions about consumer and financial impacts (AC9HE9S03)

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GENERAL CAPABILITIES

Critical and Creative Thinking

- Identify and clarify significant information and opinion from a range of sources, including visual information and digital sources (Level 6)

Literacy

- Responds to highly complex texts (Level 8)
- Adopts and re-uses complex abstractions heard in texts (Level 8)
- Gives an extended explanation and evaluation of a complex concept, issue or process (Level 7)
- References and quotes authorities or statistics to add authority (e.g. "according to a recent OECD report") (Level 8)

CROSS-CURRICULUM PRIORITIES

Sustainability

- Sustainable patterns of living require the responsible use of resources, maintenance of clean air, water and soils, and preservation or restoration of healthy environments (SS2)
- Sustainably designed products, environments and services aim to minimise the impact on or restore the quality and diversity of environmental, social and economic systems (SD1)
- Creative and innovative design is integral to the identification of new ways of sustainable living (SD2)
- Sustainable design requires an awareness of place, past practices, research and technological developments, and balanced judgements based on projected environmental, social and economic impacts (SD3)

Aboriginal and Torres Strait Islander Histories and Cultures

- First Nations communities of Australia maintain a deep connection to, and responsibility for, Country/ Place and have holistic values and belief systems that are connected to the land, sea, sky and waterways (A_TSICP1)

FURTHER INFORMATION

For further information on Fuelling a Hydrogen Future, contact H2learning@cqu.edu.au or the course authors:

- Dr. Cal Devney
(c.devney@cqu.edu.au)
- Assoc Prof Aruna Jayasuriya
(a.jayasuriya@cqu.edu.au)