



CHRISTIAN HERITAGE COLLEGE

CR370

**CURRICULUM AND PEDAGOGY:
SCIENCE AND TECHNOLOGIES**

This sample unit outline is provided by CHC for prospective and current students to assist with unit selection.

Elements of this outline which may change with subsequent offerings of the unit include Content, Required Texts, Recommended Readings and details of the Assessment Tasks.

Students who are currently enrolled in this unit should obtain the outline for the relevant semester from the unit lecturer.

Unit code	CR370
Unit name	Curriculum and Pedagogy: Science and Technologies
Associated higher education awards	Bachelor of Education (Primary)
Duration	One semester
Level	Advanced
Core/elective	Core
Weighting	Unit credit points: 10 Course credit points: Bachelor of Education (Primary) 320
Delivery mode	Face-to-face on site
Student workload	<p><i>Face-to-face on site</i></p> <p>Contact hours 30 hours Reading, study and assignment preparation 120 hours TOTAL 150 hours</p> <p>Students requiring additional English language support are expected to undertake an additional one hour per week.</p>
Prerequisites/ co-requisites/ restrictions	<p><i>Prerequisite:</i></p> <p>CR172 Introduction to Science and Technologies <i>and</i> PE332 Teaching for Learning: Curriculum and Planning (P-6)</p>
Rationale	<p><u>Enduring Understanding:</u> Effective primary teachers are scientifically literate and confident in a range of pedagogies that motivate learners and promote scientific inquiry.</p> <p>An understanding of pedagogy related to specific content knowledge in science and technologies provides for effective teaching in these areas. This unit is designed to assist pre-service teachers to develop their professional practice in the teaching of science and technologies. They will explore examples of 'best practice' pedagogy in these areas, based on the latest research into how students learn and engage with science and technologies. Pre-service teachers will be equipped to critically analyse a range of teaching approaches for effective, engaging lessons for students in the primary context.</p>
Prescribed text(s)	Selected readings will be available via the Moodle™ site for this unit.
Recommended readings	<p>Books</p> <p>Australian Academy of Science. (2006). <i>Primary connections: Linking science with literacy</i>. Canberra, ACT: Department of Education, Employment & Workplace Relations.</p> <p>Boss, S., & Krauss, J. (2014). <i>Reinventing project-based learning: Your field guide to real-world projects in the digital age</i> (2nd ed.). Eugene, OR: International Society for Technology in Education.</p> <p>Giberson, K. (2012). <i>The wonder of the universe: Hints of God in our fine-tuned world</i>. Downers Grove, IL: IVP Books.</p> <p>Harlen, W., & Qualter, A. (2014). <i>The teaching of science in primary schools</i> (6th ed.). London, UK: Routledge.</p>

	<p>Hewitt, P.G., Lyons, S., Suchocki, J., & Yeh, J. (2013). <i>Conceptual integrated science</i> (2nd ed.). San Francisco, CA: Pearson.</p> <p>Hudson, P. (Ed.). (2013). <i>Learning to teach in the primary classroom</i>. Melbourne, VIC: Cambridge University Press.</p> <p>Martin, R., Sexton, C., & Franklin, T. (2014). <i>Teaching science for all children: An inquiry approach</i> (5th ed.). Harlow, UK: Pearson Education.</p> <p>Moomaw, S. (2013). <i>Teaching STEM in the early years: Activities for integrating science, technology, engineering, and mathematics</i>. St. Paul, MN: Redleaf Press.</p> <p>Journals</p> <p><i>The Australian Science Teachers' Journal</i></p> <p><i>Journal of Technology Education</i></p> <p>Websites</p> <p>Australian Academy of Science https://www.science.org.au/</p> <p>Commonwealth Scientific and Industrial Research Organisation (CSIRO) http://www.csiro.au/</p> <p>Scootle https://www.scootle.edu.au/</p> <p>Australian Science Teachers Association www.asta.edu.au</p> <p>Australasian Science Magazine www.australasianscience.com.au</p> <p>ABC Science Online www.abc.net.au/science</p> <p>Science Teachers Association of Queensland (STAQ) http://www.staq.qld.edu.au/</p> <p>In addition to the resources above, students should have access to a Bible, preferably a modern translation such as The Holy Bible: The New International Version 2011 (NIV 2011) or The Holy Bible: New King James Version (NKJV).</p> <p>These and other translations may be accessed free on-line at http://www.biblegateway.com. The Bible app from LifeChurch.tv is also available free for smart phones and tablet devices.</p>
Specialist resource requirements	Nil
Content	<ol style="list-style-type: none"> 1. The place of science and technology in schools and society, including <ol style="list-style-type: none"> a. using science and technology in culturally diverse classrooms; b. engaging students from Aboriginal and Torres Strait Islander backgrounds in culturally appropriate ways in science and technology; and c. using science and technology for promoting reconciliation with Aboriginal and Torres Strait Islander peoples 2. Reviewing the literature: Best practice in science and technology education 3. Legislative requirements and safety in the science classroom 4. Resources and strategies to creatively engage learners in science and technologies classrooms including literacy, numeracy and ICT priorities 5. Approaches to teaching science and technology including Christian worldview perspectives 6. Engaging diverse learners in science and technology using ICT pedagogies 7. Science and technology teaching: Putting knowledge and theory into practice using technology and innovation

Learning outcomes	<p>On completion of this unit, pre-service teachers will have provided evidence that they have:</p> <ol style="list-style-type: none"> engaged content and pedagogies mediated through ICT, relevant to the Australian Curriculum: Science and the Australian Curriculum: Technology documents; analysed current research regarding science education in primary classrooms; developed teaching and learning strategies and resources for teaching and assessing school student learning including literacy, numeracy and ICT pedagogies in science and technology; critically analysed science curriculum documents and pedagogies from a Christian worldview perspective; and communicated at an appropriate tertiary standard: with special attention to design elements, grammars, usage, logical relations, style, referencing and presentation.
Assessment tasks	<p>Task 1: Digital Concept Map</p> <p>Investigate the links between the science and technologies curriculum</p> <p>Word Length/Duration: 1,500 words</p> <p>Weighting: 40%</p> <p>Learning Outcomes: 1-3, 5</p> <p>Assessed: Week 5</p> <p>Task 2: Unit Plan</p> <p>Develop a unit plan with resources that incorporate ICT. Complete an evaluation and reflection on the unit plan.</p> <p>Word Length/Duration: 2,000 words</p> <p>Weighting: 60%</p> <p>Learning Outcomes: 1-5</p> <p>Assessed: Week 14</p>
Australian Professional Standards for Teachers (APST)	<p>The learning opportunities provided in this unit contribute to the development of practice, knowledge and values of the following <i>Australian Professional Standards for Teachers</i>:</p> <ol style="list-style-type: none"> 1.2 Understand how students learn 1.3 Students with diverse linguistic, cultural, religious and socioeconomic backgrounds 1.4 Strategies for teaching Aboriginal and Torres Strait Islander students 2.3 Curriculum, assessment and reporting 2.4 Understand and respect Aboriginal and Torres Strait islander people to promote reconciliation between Indigenous and non-Indigenous 2.6 Information and Communication Technology 3.5 Use effective classroom communication 3.6 Evaluate and improve teaching programs 4.2 Manage classroom activities 4.5 Use ICT safely, responsibly and ethically

Successful completion of this unit will provide significant evidence about the following <i>Australian Professional Standards for Teachers</i> :			
<i>Graduate Teacher Standards</i>		<i>Learning Outcomes</i>	<i>Assessment Tasks</i>
2.1	Demonstrate knowledge and understanding of the concepts, substance and structure of the content and teaching strategies of the teaching area.	1-4	1, 2
2.2	Organise content into an effective learning and teaching sequence.	1, 3, 4	2
2.5	Know and understand literacy and numeracy teaching strategies and their application in teaching areas.	3	2
3.1	Set learning goals that provide achievable challenges for students of varying abilities and characteristics.	1, 3, 4	2
3.2	Plan lesson sequences using knowledge of student learning, content and effective teaching strategies.	1, 3, 4	2
3.3	Include a range of teaching strategies.	1-4	2
3.4	Demonstrate knowledge of a range of resources, including ICT, that engage student in their learning.	1, 3	1, 2
4.4	Describe strategies that support students' wellbeing and safety working within school and/or system, curriculum and legislative requirements.	3	2
5.1	Demonstrate understanding of assessment strategies, including informal and formal, diagnostic, formative and summative approaches to assess student learning.	3	2
Unit summary	This unit will engage pre-service teachers in best-practice pedagogies for teaching science and technologies for the primary classroom.		