

CHRISTIAN HERITAGE COLLEGE

CR172

INTRODUCTION TO 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	CR172				
Unit name	Introduction to Science and Technologies				
Associated higher education awards	Bachelor of Education (Primary)				
Duration	One semester				
Level	Introductory				
Core/elective	Core				
Weighting	Unit credit points:10Course credit points:Bachelor of Education (Primary)320				
Delivery mode	Face-to-face on site				
Student workload	Face-to-face on site 39 hours Contact hours 39 hours Reading, study and assignment preparation 111 hours TOTAL 150 hours Students requiring additional English language support are expected to undertake an				
	additional one hour per week.				
Prerequisites/ co-requisites/ restrictions	Nil				
Rationale	Enduring Understanding: Appreciation for key principles and theories relating to biological, chemical, physical, and earth and space science fields of investigation is essential for teaching science and technologies.				
Effective teachers of Science in the Prep-Year 2 and Year 3-6 contexts need a sour and understanding of scientific principles and require the development of skills at the processes of scientific and technological inquiry. This unit will investigate con curriculum, pedagogies and ways of thinking and working scientifically that will en- service teachers' engagement in explorations within the four strands of the scien Pre-service teachers will also investigate the role of ICTs that complement scientif Through inquiry based investigations and activities, pre-service teachers will explo- pedagogies and practices for effective teaching of science and technologies withi worldview perspective.					
Prescribed text(s)) Moomaw, S. (2013). Teaching STEM in the early years: Activities for integrating science, technology, engineering, and mathematics. St. Paul, MN: Redleaf Press.				
	Selected readings will be available via the Moodle™ site for this unit.				
Recommended readings	 Books Aitken, J. (2012). A sense of wonder: Science in early childhood education. Albert Park, VIC: Teaching Solutions. Australian Academy of Science. (2006). Primary connections: Linking science with literacy. Canberra, ACT: Department of Education. Employment & Workplace Relations. 				

	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.					
	Giberson, K. (2012). <i>The wonder of the universe: Hints of God in our fine-tuned world.</i> Downers Grove, IL: IVP Books.					
	Hewitt, P.G., Lyons, S., Suchocki, J., & Yeh, J. (2013). <i>Conceptual integrated science</i> (2nd ed.) San Francisco, CA: Pearson.					
	James, A.N. (2009). <i>Teaching the female brain: How girls learn math and science.</i> Thousand Oaks, CA: Corwin Press.					
	Skamp, K., & Preston, C. (2015). <i>Teaching primary science constructively</i> (5th ed.). South Melbourne, VIC: Cengage Learning.					
	Journals					
	The Australian Science Teachers' Journal					
	Journal of Technology Education					
	Websites					
	Australian Academy of Science					
	https://www.science.org.au/					
	Commonwealth Scientific and Industrial Research Organisation (CSIRØ) http://www.csiro.au/					
	Scootle https://www.scootle.edu.au/					
	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) o The Holy Bible: New King James Version (NKJV).					
	These and other translations may be accessed free on-line at <u>http://www.biblegateway.com</u> . The Bible app from LifeChurch tv is also available free for smart phones and tablet devices.					
Specialist resource requirements	Nil					
Content	1. Science and technology as human practices					
(2. Historical and cultural influences on science and technology; Aboriginal and Torres Strait					
(Islander perspectives					
	 Scientific inquiry skills and processes, including safety; and scientific and technological 					
	investigations in the primary years					
	5. Scientific data; qualitative and quantitative approaches to data collection, analysis and use 6. Key concepts in biological sciences for primary years; including, living and pop-living; and					
	the needs of living organisms					
	7. Key concepts in chemical sciences for primary years students: including, natural and					
	processed materials; and reversible and non-reversible changes 8. Key concepts in physical sciences for primary years: including, pushing and pulling; sinking					
	and floating; and gravity and lift					
	9. Key concepts in earth and space sciences for primary years: including, weather; riches					
	10. Pedagogical approaches including ICT pedagogies which engage and enhance childhood					
	learning in science and technologies					
	11. Key concepts in design and ICTs; including, design; systems; and preferred futures					

Learning outcomes	On completion of this unit, pre-service teachers will have provided evidence that they have:					
	 developed an understanding of the key concepts of science for the primary years; including biological, chemical, earth and space and physical sciences; developed knowledge and understanding of the key concepts of technology for the primary years; including design and digital technologies; understood the basic principles of scientific investigation and inquiry, and its importance in seeking answers to questions about the physical universe; described, applied, and explained scientific inquiry skills and processes for investigating in science and technologies for primary aged children; developed literacy, numeracy, and ICT pedagogies specific to engaging in science and technology; and communicated at an appropriate tertiary standard: with special attention to design elements, grammars, usage, logical relations, style, referencing and presentation. 					
Assessment tasks	Task 1: Technology Investigation					
	Word Length/Duration:	1,500 words				
	Weighting:	50%				
	Learning Outcomes:	1, 3, 5-6		\diamond		
	Assessed: Week 7 Task 2: Science Investigation					
	Word Length/Duration:	Length/Duration: 1,500 words				
	Weighting:	50%	1%			
	Learning Outcomes:	1, 2, 4, 6				
	Assessed:	Week 14				
Australian Professional Standards for	The learning opportunities provided in this unit contribute to the development of practice, knowledge and values of the following Australian Professional Standards for Teachers:					
Teachers (APST)	2.1 Content and teaching strategies of the teaching area					
	2.5 Literacy and numeracy strategies					
	2.6 Information and Communication Technology					
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	Successful completion of this unit will provide significant evidence about the following Australian Professional Standards for Teachers:					
	Graduate Teacher Standar	ds	Learning Outcomes	Assessment Tasks		
	Not assessed in this unit		N/A	N/A		
Unit summary	Pre-service teachers should possess the skills and understandings needed to help their students to develop knowledge and appreciation of science and technology. These two related disciplines are ways that humankind makes sense of the world and creates solutions to various problems, skills which will be beneficial to school students and to those around them.					