



CHRISTIAN HERITAGE COLLEGE

**SC120**

**ENVIRONMENTAL SCIENCE**

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.

<b>Unit code</b>	SC120
<b>Unit name</b>	Environmental Science
<b>Associated higher education awards</b>	Bachelor of Education (Primary) Bachelor of Education (Secondary) Bachelor of Arts/Bachelor of Education (Secondary)
<b>Duration</b>	One semester
<b>Level</b>	Introductory
<b>Core/elective</b>	Elective
<b>Weighting</b>	Unit credit points: 10  Course credit points: Bachelor of Education (Primary) 320 Bachelor of Education (Secondary) 320 Bachelor of Arts/Bachelor of Education (Secondary) 320
<b>Delivery mode</b>	Face-to-face on-site
<b>Student workload</b>	<i>Face-to-face on site</i> Contact hours 30 hours Reading, study and assignment preparation 120 hours <b>TOTAL 150 hours</b>  Students requiring additional English language support are expected to undertake an additional one hour per week.
<b>Prerequisites/ co-requisites/ restrictions</b>	Nil
<b>Rationale</b>	Over several decades there has been growing interest in and concern for the world's environmental systems and climate, and the sustainability of human life and society in light of pressures placed on the environment by human activity. Environmental science explores the Earth, with a view to developing a balanced approach to pressures of developing, extracting, adapting and utilising the natural resources and ecosystems of God's creation. Global climate change is a topical issue which will require forward-thinking and strategic efforts by contemporary society in areas of mitigation and adaptation for the benefit and welfare of future generations. Students will engage with environmental issues in ways that are scientifically informed, based on values of stewardship, conservation, equity and biodiversity. In particular, students will examine principles of sustainability, as a guiding principle for evaluating human activity and its impact on local and global environments.  This unit exposes preservice teachers to key concepts involved in environmental protection and management, and uses a variety of strategies to raise awareness of associated issues including field studies, focussed research, group investigations and discussions.
<b>Prescribed text(s)</b>	Selected readings will be available via the Moodle™ site for this unit.
<b>Recommended readings</b>	Botkin, D.B. & Keller, E. A. (2014) <i>Environmental science: earth as a living planet</i> , 9th Edition, New York, NY: Wiley.  De Vries, B. J. M. (2013). <i>Sustainability science</i> . New York, NY: Cambridge University Press.

	<p>Field, C.B &amp; Barros, V. R. (Eds.). (2014). <i>Climate change 2014: impacts, adaptation, and vulnerability: part a: global and sectoral aspects: working group ii contribution to the fifth assessment report of the intergovernmental panel on climate change</i>. New York, NY: Cambridge University Press</p> <p>Ginley, D.S. &amp; Cahen, D. (Eds.). (2012). <i>Fundamentals of materials for energy and environmental sustainability</i>. New York, NY: Cambridge University Press.</p> <p>Hore-Lacy, I. (2006). <i>Responsible dominion – a Christian approach to sustainable development</i>. Vancouver: Regent College press.</p> <p>Houghton, J. T. (2015). <i>Global warming: The complete briefing</i>. Cambridge, UK: Cambridge University Press.</p> <p>Incropera, F. P. (2016). <i>Climate change: a wicked problem complexity and uncertainty at the intersection of science, economics, politics, and human behaviour</i>. New York, NY: Cambridge University Press.</p> <p>Miller, G. T &amp; Spoonman, S.E. (2012). <i>Living in the environment</i>. (17th ed.). Belmont CA: Brooks/Cole.</p> <p>Schaeffer, F. A. (2005) <i>How should we then live? (L'Abri 50th ann. ed.): The rise and decline of western thought and culture</i>. Wheaton, IL: Good News Publishers.</p> <p>White, R. S. (Ed.). (2009). <i>Creation in crisis: Christian perspectives on sustainability</i>. London, England: Society for Promoting Christian Knowledge.</p> <p><b>Audiovisual resources</b></p> <p>Do the Math—the movie <a href="http://youtu.be/KuCGVwJIRd0">http://youtu.be/KuCGVwJIRd0</a></p> <p>Shenk, J., Berge, R. &amp; Cohen, B. (2011). <i>The Island President</i>. Samuel Goldwyn Films.</p> <p><b>Journals</b></p> <p><i>American Journal of Environmental Sciences</i></p> <p><i>Environmental Science and Technology</i></p> <p><i>International Journal of Applied Environmental Sciences</i></p> <p><i>Modeling earth systems and environment</i></p> <p><i>Springerbriefs in environmental science</i></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) or The Holy Bible: New King James Version (NKJV).</p> <p>These and other translations may be accessed free on-line at <a href="http://www.biblegateway.com">http://www.biblegateway.com</a>. The Bible app from LifeChurch.tv is also available free for smart phones and tablet devices.</p>
<b>Specialist resource requirements</b>	Nil
<b>Content</b>	<ol style="list-style-type: none"> <li>1. Anthropogenic environmental and climate change: the physical sciences basis</li> <li>2. Science and the environment: human impact, protection, stewardship and management</li> <li>3. Sustainability in environmental science: knowledge and attitudes relevant to changing behaviour for enhanced 'creation care' and improved environmental outcomes</li> <li>4. Principles, models and practices for environmental science, including sustainability</li> <li>5. Researching environmental issues: current best practices, issues and perspectives; sustainability</li> <li>6. Christian attitudes to the environment; exploring Christian perspectives on environmental protection based on Biblical foundations</li> </ol>

<b>Learning outcomes</b>	<p>On completion of this unit, students will have provided evidence that they have:</p> <ol style="list-style-type: none"> <li>1. developed knowledge and understanding of the concepts of environmental science, including sustainability;</li> <li>2. analysed the role of human impact upon the environment using scientific enquiry;</li> <li>3. demonstrated an appreciation of the importance of ethical and moral practices in environmental science, from a biblical worldview perspective;</li> <li>4. considered and proposed environmental science protection and management strategies using perspectives based on biblical foundations;</li> <li>5. reflected on scientific models, principles and practices of environmental science;</li> <li>6. developed and applied advanced scientific knowledge and skills for researching environmental issues; and</li> <li>7. communicated at an appropriate tertiary standard: with special attention to design elements, grammars, usage, logical relations, style and presentation.</li> </ol>
<b>Assessment tasks</b>	<p><b>Task 1: Research Essay</b></p> <p>Word length/Duration: 2000 words</p> <p>Weighting: 50%</p> <p>Learning Outcomes: 1-4, 7</p> <p>Assessed: Week 8</p> <p><b>Task 2: Scientific Report and Site Evaluation</b></p> <p>Word length/Duration: 2000 words</p> <p>Weighting: 50%</p> <p>Learning Outcomes: 1-7</p> <p>Assessed: Week 14</p>
<b>Unit summary</b>	<p>This unit exposes preservice teachers to key concepts involved in environmental protection and management, and uses a variety of strategies to raise awareness of associated issues including field studies, focussed research, group investigations and discussions.</p>