



## SAMPLE COURSE OUTLINE

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**EARTH AND ENVIRONMENTAL SCIENCE**  
**GENERAL YEAR 12**

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## Sample course outline

### Earth and Environmental Science – General Year 12

#### Unit 3 and Unit 4

#### Science Inquiry Skills

Science Inquiry Skills align with the Science Understanding and Science as a Human Endeavour content of the unit and are integrated into the learning experiences for Units 3 and 4.

- follow sets of written or verbal instruction accurately
- construct questions for investigation, propose hypotheses, identify variables and predict possible outcomes
- plan, select and use appropriate investigation methods, including field work, sampling techniques, laboratory experimentation and control variables to collect reliable data
- assess risk and address ethical issues associated with these methods
- organise and clearly represent data in tables and graphs to identify trends, patterns and relationships
- describe sources of experimental error
- use evidence to make and justify conclusions
- interpret a range of texts, and evaluate the conclusions by considering the quality of available evidence
- use appropriate representations, including classification keys, tables, diagrams, maps and images to communicate understanding, solve problems and make predictions
- communicate scientific ideas and information for a particular purpose, using appropriate scientific language, conventions and representations

## Semester 1 – Unit 3 – Earth’s resources

Week	Key teaching points
1–2	<ul style="list-style-type: none"> <li>exploration methods for locating ore deposits and energy resources, such as seismic survey, magnetic survey, gravity survey, soil and stream sampling, geological mapping</li> </ul>
3–4	<ul style="list-style-type: none"> <li>the type of mining used is related to the depth, size and grade of the ore body, and the application of underground and surface methods of extraction reflects this</li> </ul> <p><b>Task 1:</b> Experiment – Extraction of metal from ore</p>
5–6	<ul style="list-style-type: none"> <li>social and environmental guidelines need to be adhered to in order to responsibly manage a mining operation</li> <li>Barrow Island oil and gas field is managed according to environmental and cultural guidelines (SHE)</li> </ul> <p><b>Task 2:</b> Extended task – Case study of a mine/resource site or field trip report</p>
7–8	<ul style="list-style-type: none"> <li>environmental strategies are employed to rehabilitate an area after extraction operations have ceased</li> </ul> <p><b>Task 3:</b> Test – Exploration methods, mining operations, rehabilitation</p> <p><b>Task 4:</b> Investigation – Rehabilitation techniques - effect of smoke water on germination of native plants</p>
9–11	<ul style="list-style-type: none"> <li>the formation and preservation of fossils</li> <li>the study of fossils and their distribution provides information about our understanding of paleoecology and the changes that have taken place during Earth’s history, such as meteorite impacts, climate change, volcanic eruptions</li> </ul> <p><b>Task 5:</b> Investigation – Fossil identification</p>
12–13	<ul style="list-style-type: none"> <li>the formation and accumulation of fossil fuels</li> <li>the unsustainable use of Earth’s resources has environmental implications</li> </ul> <p><b>Externally set task</b></p>
14–15	<ul style="list-style-type: none"> <li>the Western Australian resources industry makes an important contribution to Australia’s economy and employment opportunities (SHE)</li> </ul> <p><b>Task 6:</b> Test – Fossils, fossil fuels, WA resources industry</p>

## Semester 2 – Unit 4 – Sustainable Earth

Week	Key teaching points
1–3	<ul style="list-style-type: none"> <li>natural hazards, including cyclones, floods, drought, earthquakes, tsunamis and volcanic eruptions; impact on the environment and on human societies. Planning for natural hazards may reduce their impact</li> </ul>
4	<ul style="list-style-type: none"> <li>the climatic events, El Niño and La Niña, can have significant effects on society and biodiversity</li> </ul>
5–6	<ul style="list-style-type: none"> <li>the mechanism and significance of the enhanced greenhouse effect; the causes of climate change; the effects of climate change; strategies to adapt to climate change effects; and the occurrence of climate change throughout geological history</li> </ul> <p><b>Task 7:</b> Investigation – Effects of carbon dioxide on temperature change</p>
7–8	<ul style="list-style-type: none"> <li>the climate change debate – scientific evidence for and against (SHE)</li> </ul> <p><b>Task 8:</b> Test – Natural hazards, La Niña, El Niño, greenhouse effect</p>
9–11	<ul style="list-style-type: none"> <li>the effects of climate change on biodiversity and industries, such as fisheries, viticulture, agriculture</li> <li>a Western Australian example of a biotic resources development, including possible future impacts due to climate change (SHE)</li> </ul> <p><b>Task 9:</b> Extended task – The impact of climate change on a WA biotic resource</p>
12–15	<ul style="list-style-type: none"> <li>renewable energy resources, including geothermal, wave, tidal, biofuels, solar or wind and their effects on the environment. Sites for alternative energy sources in Western Australia can be identified</li> <li>renewable energy research and development in Western Australia, such as solar farms, geothermal cooling (SHE)</li> </ul> <p><b>Task 10:</b> Investigation – Design, construct and test a solar oven</p> <p><b>Task 11:</b> Test – Climate change, renewable energy</p>