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.
<table>
<thead>
<tr>
<th><strong>Unit Name</strong></th>
<th>Curriculum and Pedagogy: Science</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit Code</strong></td>
<td>CR272</td>
</tr>
<tr>
<td><strong>Awards</strong></td>
<td>Bachelor of Education (Primary)</td>
</tr>
<tr>
<td></td>
<td>Bachelor of Education (Middle Years) - Science minor</td>
</tr>
<tr>
<td></td>
<td>Bachelor of Arts/Bachelor of Education (Secondary) - Science minor</td>
</tr>
<tr>
<td><strong>Core/Elective</strong></td>
<td>Core</td>
</tr>
<tr>
<td><strong>Prerequisite</strong></td>
<td>CR171 Introduction to Science</td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td>Internal</td>
</tr>
<tr>
<td><strong>Weighting</strong></td>
<td>10 credit points</td>
</tr>
<tr>
<td><strong>Delivery/Contact hrs</strong></td>
<td>Class contact 33 hours</td>
</tr>
<tr>
<td></td>
<td>Engagement with unit materials readings 44 hours</td>
</tr>
<tr>
<td></td>
<td>Assignment preparation 63 hours</td>
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<tr>
<td></td>
<td>Total 140 hours</td>
</tr>
<tr>
<td><strong>Teaching Staff</strong></td>
<td>To be appointed</td>
</tr>
<tr>
<td><strong>Unit Rationale</strong></td>
<td>It is widely recognised that scientific research and having a scientifically literate populace are important for a number of benefits in every society. In many countries today there is a shortage of qualified science teachers, leading to fears of lowered scientific knowledge and literacy in future generations. One strategy to tackle this problem is to improve the quality of science teaching in primary and middle schools, to sow seeds that will hopefully result in improved outcomes as more school students opt to study science at senior levels. This unit is designed to help preservice teachers to develop their personal scientific literacy and knowledge, but more importantly to give them experience of ‘best practice’ science education, based on latest research into how school students learn science. Preservice teachers will have the opportunity to develop research-based models for effective, fun science lessons for school students in the middle phase of learning. Another core outcome of the unit is an investigation of preservice teachers’ understandings of and experiences with science at school and elsewhere, to gain insights into how science teaching is received by school students, with a view to developing clearer ideas about how to structure and present programs of work in science that will impact school students in positive ways. They will also explore the connection between science, the literacies of science and scientific literacy, with a view to developing their own skills and then exploring ways to scaffold school students’ learning in Science.</td>
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</table>

**Learning Outcomes:**

On completion of this unit, preservice teachers will have provided evidence that they have:

1. Engaged deeper knowledge of science concepts identified in Queensland and national science syllabuses.
2. Identified the literate, numerate and digital demands expected of students engaging in learning in the Science learning area.
3. Engaged with pedagogical strategies, tools and resources mediated through ICT technologies, relevant to the Science learning area.
4. Investigated current research and other writing regarding Science education in early and middle phase classrooms, forming positive opinions and attitudes to Science education.
5. Developed teaching and learning strategies and resources to engage, support and assess school student learning and development in relation to literate, numerate and digital demands in Science.
6. Planned, implemented and evaluated a unit of work in Science which incorporates best practice models.
7. Critically considered science curriculum and content documents from a Christian perspective, in order to reach an informed personal position on questions regarding Science and faith.
8. Considered critically how school students learn science and how different approaches to teaching science might incorporate relevant, fun, informative practices in Science teaching and learning.

9. Written at an appropriate tertiary standard (with special attention to correct grammar, punctuation, spelling, vocabulary, usage, sentence structure, logical relations, style, referencing and presentation).

Content:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction; revision of curriculum documentation, the place of Science in schools and society</td>
</tr>
</tbody>
</table>
| 2-3  | **Reviewing Science Discipline Content**  
- Earth and Beyond  
- Energy and Change  
- Life and Living  
- Natural and Processed Materials  
- Science as a Human Endeavour  
- Science Inquiry Skills |
| 4-6  | **Reviewing the literature: best practice in Science**  
- Scientific knowledge and scientific literacy among school students and adults  
- Engaging scientific misconceptions  
- Principles from Primary Connections; the 5Es, investigating, assessment, cooperative learning, indigenous perspectives  
- Developing literacy, numeracy and digital literacy through reading and writing in Science  
- Use of ICTs, including digital data collection and logging devices, in scientific experiments and other investigations  
- Best practice in Science education |
| 7-8  | **Approaches to teaching Science**  
- Transmission approaches  
- Discovery approaches  
- Process skills approaches  
- Interactive approaches  
- Reciprocal approaches |
| 9-10 | **Engaging diverse learners in Science**  
- School students’ understanding, thinking and talking about Science  
- Investigating school students’ knowledge of and attitudes to Science  
- Engaging school student ideas about scientific concepts  
- Reengaging reluctant learners in Science |
| 11   | Science teaching: putting knowledge and theory into practice |

Set Text Requirements:


All state and national syllabus documentation, including:
- Early Years Curriculum Guide: Active learning processes; Investigating the natural world
- Year 1 Learning Statements: Active learning processes; Scientific inquiry
- Essential Learnings: Science
- Australian Curriculum: Science
Recommended Readings:


Assessment:

<table>
<thead>
<tr>
<th>Assessment Item</th>
<th>Week Due</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science Syllabus Concept Map</td>
<td>1-4, 7-9</td>
<td>30%</td>
</tr>
<tr>
<td>Unit Plan (2000 words and 30 minutes)</td>
<td>1-9</td>
<td>Unit Plan: 50%</td>
</tr>
<tr>
<td></td>
<td>Weeks 7-11</td>
<td>Lesson: 20%</td>
</tr>
</tbody>
</table>

Unit Overview:

This unit is designed to help preservice teachers to develop their personal scientific literacy and knowledge, but more importantly to gain knowledge and experience of ‘best practice’ science education, based on latest research into how school students learn Science.