<table>
<thead>
<tr>
<th>Section</th>
<th>Number of Students</th>
<th>Year Level(s)</th>
<th>Subject(s)</th>
<th>Curriculum Relevance</th>
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<td>• Turntables</td>
<td>8, 8, ∞</td>
<td>9, 10, 11, 9, 10, 11</td>
<td>Physics, Chemistry</td>
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</tbody>
</table>

**Year 9**

*Science Understanding*

Chemical sciences

- All matter is made of atoms which are composed of protons, neutrons and electrons; natural radioactivity arises from the decay of nuclei in atoms (ACSSU177)

*Science as a Human Endeavour*

Use and influence of science

- People can use scientific knowledge to evaluate whether they should accept claims, explanations or predictions (ACSHE160)

*Science Inquiry Skills*

Processing and analysing data and information

- Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (ACSI169)
- Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (ACSI170)

**Year 10**

*Science as a Human Endeavour*

Use and influence of science

- People can use scientific knowledge to evaluate whether they should accept claims, explanations or predictions (ACSHE194)
<table>
<thead>
<tr>
<th>Environment</th>
<th>Solar Hot Water</th>
<th>$\infty$</th>
<th>9,10,11</th>
<th>Physics</th>
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<tbody>
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<td>Cyclone</td>
<td>$\infty/1$</td>
<td>9,10,11</td>
<td>Physics</td>
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<tr>
<td></td>
<td>Wind Tunnel</td>
<td>1</td>
<td>9,10,11</td>
<td>Physics</td>
</tr>
</tbody>
</table>

**Planning and conducting**
- Plan, select and use appropriate investigation methods, including field work and laboratory experimentation, to collect reliable data; assess risk and address ethical issues associated with these methods (ACSI199)
- Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data (ACSI200)

**Processing and analysing data and information**
- Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (ACSI203)
- Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (ACSI204)

**Year 11 Unit 1: Area of Study 1: Nuclear Physics and Radioactivity**
- Explain why some atomic nuclei are stable and others are not
- Describe the radioactive decay of unstable nuclei in terms of half-life
- Describe the detection and penetrating properties of $\alpha$, $\beta$ and $\gamma$ radiation
- Describe the effects of $\alpha$, $\beta$ and $\gamma$ radiation on humans
- Describe the effects of ionising radiation on living things and the environment
- Describe the risks for living things and/or the environment associated with the use of nuclear reactions and radioactivity

**Year 9**

**Science Understanding**

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</tbody>
</table>

**Physical sciences**
- Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)

**Science as a Human Endeavour**

Use and influence of science

- The values and needs of contemporary society can influence the focus of scientific research (ACSHE228)

**Science Inquiry Skills**

Planning and conducting

- Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data (ACSIS200)

Processing and analysing data and information

- Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (ACSIS169)
- Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (ACSIS170)

**Year 10**

**Science Understanding**

Physical sciences

- Energy conservation in a system can be explained by describing energy transfers and transformations (ACSSU190)

**Science as a Human Endeavour**
## Use and influence of science

- The values and needs of contemporary society can influence the focus of scientific research (ACSH228)

## Science Inquiry Skills

### Planning and conducting

- Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data (ACSI200)

### Processing and analysing data and information

- Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (ACSI169)
- Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (ACSI170)

## VCE Units 1&2: Detailed study 3.5: Investigations: Sustainable Energy Sources

- explain the terms sustainable and renewable in terms of energy use
- compare different renewable energy sources and investigate one experimentally
- analyse the potential of the system being investigated to make a significant contribution to the community’s energy requirements, including the benefits, limitations and environmental consequences of the system
- evaluate the model system in relation to a real-life problem involving energy supply
- interpret information sources to evaluate risks in the development and use of an energy supply system
<table>
<thead>
<tr>
<th>Structure</th>
<th>eVBL Tomography AFM</th>
<th>1</th>
<th>11,12</th>
<th>Physics Physics</th>
</tr>
</thead>
</table>

**VCE Units 1&2: Detailed study 3.6: Medical Physics**
- describe and evaluate the use of lasers as intense energy sources for medical treatments
- describe and compare processes of, and images produced by, medical imaging using two or more of ultrasound, X-rays, CT, MRI and PET

**VCE Units 3&4: Detailed study 3.4: Synchrotron and its Applications**
- compare the characteristics of synchrotron radiation, including brightness, spectrum and divergence with the characteristics of electromagnetic radiation from other sources including lasers and X-ray tubes
- explain, using the characteristics of brightness, spectrum and divergence, why for some experiments synchrotron radiation is preferable to laser-light and radiation from X-ray tubes

Sources:
Year 9 and 10

VCE Units 1-4
Physics Study Design