SAMPLE COURSE OUTLINE

ENGINEERING STUDIES
ATAR YEAR 11
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# Sample course outline

## Engineering Studies – ATAR Year 11

### Unit 1 and Unit 2

#### Semester 1

<table>
<thead>
<tr>
<th>Week</th>
<th>Key teaching points</th>
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</table>
| **Term 1**<br>1–2 | Overview of unit and assessment requirements  
Introduction to design process  
**Task 1: Design project one**  
• development of a design folio  
• design brief, and investigation  
**Engineering design process – Investigating**  
• develop a design brief  
• use research skills to identify existing solutions/products  
• describe and analyse existing solutions/products |
| 3–5 | Learning of specialist theory and specific understandings from either specialty field; Mechanical or Mechatronics  
**Task 2: Investigate materials and components**  
• research materials and components suitable for the development of a solution  
• research forms of energy  
• determine form of energy suitable for the project  
**Investigating**  
**Core Materials** – classify types of materials  
**Engineering in Society** – definitions, and forms of energy  
**Specialty fields: Mechanical** materials, **Mechatronics** components |
| 6–7 | **Task 3: Developing a solution for Project one**  
• through annotated pictorial drawings of ideas to an final drawn proposal  
• annotated orthogonal concept drawings either CAD or hand drawn  
• calculations to estimate design function  
**Devising**  
• produce annotated pictorial drawings of design ideas  
• analyse the chosen option to be used as the solution  
**Fundamental Engineering calculations**  
**Quantity estimates** |
| 8–10 | **Task 4: Pre-production**  
• working drawings – detailed orthogonal drawings  
• lists of materials, parts and components  
• develop production plan on a timeline  
**Task 5: Pre-production skills**  
Develop production skills; apply safety and practice task/s to develop practical hand and machine skills. Modelling or prototype  
**Producing**  
• present specifications for the selected solution  
  • dimensioned pictorial and orthographic drawings  
  • materials selected, parts lists, costing of prototype or working model  
• develop and use a timeline to construct and test the solution  
• construct solution by selecting and using appropriate tools and machines, following safe work practices |
## Term 2

<table>
<thead>
<tr>
<th>Week</th>
<th>Key teaching points</th>
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</thead>
<tbody>
<tr>
<td>1–5</td>
<td><strong>Task 6: Manufacture of proposed Project one</strong>&lt;br&gt;Using prepared production plan, materials and available equipment; record progress in design folio.</td>
</tr>
<tr>
<td>6</td>
<td><strong>Task 7: Evaluation of completed Project one</strong>&lt;br&gt;Prepare written report on and photographs of completed product. <strong>Evaluating</strong> – evaluate the final solution&lt;br&gt;• test the solution for correct function and document using checklists and test data</td>
</tr>
<tr>
<td>Examination weeks 7–8</td>
<td><strong>Task 8: Semester 1 examination</strong> – of approximately 2 hours, using a modified examination design brief from the Year 12 syllabus</td>
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## Semester 2

<table>
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<tr>
<th>Week</th>
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<tbody>
<tr>
<td>1–3</td>
<td><strong>Overview of unit and assessment requirements</strong>&lt;br&gt;Re-introduction to design process, and development of a design folio&lt;br&gt;<strong>Task 9: Design Project two</strong>&lt;br&gt;design process&lt;br&gt;• determine design brief&lt;br&gt;• investigate and develop ideas&lt;br&gt;<strong>Engineering design process</strong>&lt;br&gt;<strong>Investigating</strong>&lt;br&gt;• develop a design brief&lt;br&gt;• describe and analyse existing solutions/products&lt;br&gt;• research and describe materials and components relevant to the design brief&lt;br&gt;• consider appropriate forms of energy supplies</td>
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<td>4–6</td>
<td><strong>Learning of specialist theory and specific understandings from either specialty field; Mechanical or Mechatronics</strong>&lt;br&gt;<strong>Task 10: Investigate materials and components</strong>&lt;br&gt;• research materials and components suitable for the development of a solution&lt;br&gt;• research efficiency of selected forms of energy&lt;br&gt;• research obsolescence&lt;br&gt;<strong>Core Materials</strong> – physical properties of materials&lt;br&gt;• fitness for purpose&lt;br&gt;  ▪ identify and describe the required properties of a material for a specified application&lt;br&gt;<strong>Energy</strong> – efficiency&lt;br&gt;<strong>Engineering in Society</strong> – obsolescence&lt;br&gt;<strong>Specialty fields: Mechanical</strong> materials, <strong>Mechatronics</strong> components</td>
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<td>7–8</td>
<td><strong>Task 11: Developing a solution for Project two</strong>&lt;br&gt;• through annotated pictorial drawings of ideas to an final drawn proposal&lt;br&gt;• annotated orthographic concept drawings either CAD or hand drawn&lt;br&gt;• calculations to estimate design function&lt;br&gt;<strong>Devising</strong>&lt;br&gt;• produce annotated pictorial drawings of design ideas&lt;br&gt;• analyse the chosen option to be used as the solution&lt;br&gt;<strong>Fundamental Engineering calculations</strong>&lt;br&gt;<strong>Quantity estimates</strong></td>
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| Term 3 9–10               | **Task 12: Pre-production**  
  • working drawings – detailed orthogonal drawings  
  • lists of materials, parts and components  
  • develop production plan on a timeline  
  **Producing**  
  • present specifications for the selected solution |
| Term 4 1                  | **Task 13: Pre-production skills**  
  Develop production skills; apply safety and practice task/s to develop practical hand and machine skills. Modelling or prototype |
| 2–4                       | **Task 14: Manufacture of proposed Project two**  
  Using prepared production plan, materials and available equipment; record progress in design folio. |
| 6                         | **Task 15: Evaluation of completed Project two**  
  Prepare written report on and photographs of completed product.  
  **Evaluating**  
  • evaluate the final solution in terms of:  
    ▪ meeting the requirements of the design brief  
    ▪ function and finish of the product  
    ▪ variations and changes to the design |
| Examination weeks 5–6     | **Task 16: Semester 2 examination** – of approximately 2 hours, using a modified examination design brief from the Year 12 syllabus |