**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

| **Week** | **Key teaching points** |
| --- | --- |
| **Term 1**  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 orthographic 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 |

| **Week** | **Key teaching points** |
| --- | --- |
| Term 2  1–5 | **Task 6:** **Manufacture of proposed Project one**  Using prepared production plan, materials and available equipment; record progress in design folio. |
| 6 | **Task 7: Evaluation of completed Project one**  Prepare written report on and photographs of completed product.  **Evaluating** –evaluate the final solution   * test the solution for correct function and document using checklists and test data |
| Examination  weeks  7–8 | **Task 8:** **Semester 1 examination** –of approximately 2 hours, using a modified examination design brief from the Year 12 syllabus |

## Semester 2

| **Week** | **Key teaching points** |
| --- | --- |
| **Term 3**  1–3 | Overview of unit and assessment requirements  Re-introduction to design process, and development of a design folio  **Task 9:** **Design Project two**  design process   * determine design brief * investigate and develop ideas   **Engineering design process**  **Investigating**   * develop a design brief * describe and analyse existing solutions/products * research and describe materials and components relevant to the design brief * consider appropriate forms of energy supplies |
| 4–6 | Learning of specialist theory and specific understandings from either specialty field; Mechanical or Mechatronics  **Task 10: Investigate materials and components**   * research materials and components suitable for the development of a solution * research efficiency of selected forms of energy * research obsolescence   **Core Materials** –physical properties of materials   * fitness for purpose * identify and describe the required properties of a material for a specified application   **Energy** –efficiency  **Engineering in Society** – obsolescence  **Specialty fields: Mechanical** materials, **Mechatronics** components |
| 7–8 | **Task 11:** **Developing a solution for Project two**   * through annotated pictorial drawings of ideas to an final drawn proposal * annotated orthographic 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** |

| **Week** | **Key teaching points** |
| --- | --- |
| **Term 3**  9–10  **Term 4**  1 | **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 |
| **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 |