**Sample Course Outline**

Materials Design and Technology

ATAR Year 11

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# Sample course outline

# Materials Design and Technology – ATAR Year 11

## Unit 1

#### Semester 1

| **Week** | **Key teaching points** |
| --- | --- |
| **Term 1**  1–2 | Overview of unit and assessment requirements  Introduction to design process   * designs in practice – statement of intent, investigation and devise * development of a design portfolio |
| 2–3 | **Design fundamentals and skills**  **investigate**   * application of design fundamentals and factors affecting design  |  |  | | --- | --- | | * aesthetics | * cost | | * function | * ergonomics | | * safety | * anthropometric data | | * environmental impact and considerations | |   **Task 1**  Investigate and develop ideas from:   * needs, values and beliefs of the designer/developer * sources of design inspiration * performance criteria for products * application of design fundamentals and factors affecting design. |
| 4–5 | **Nature and properties of materials**  Investigate the nature and properties, and materials in context listed in Unit 1 of the Year 11 ATAR syllabus to prepare and present a written report.  **Task 2**  Investigate materials. Research materials suitable for the development of a solution, and report on:   * nature and properties of materials * materials in context. |
| 6–9 | **Design fundamentals and skills**  **devise**  Apply skills and techniques listed in Unit 1 of the Year 11 ATAR syllabus to devise and present a design solution.  **Task 3**  Developing a solution; through concept drawings, working drawings, patterns or templates.  Final drawn proposal.  Presentation drawing of proposed solution – colour rendered pictorial 3D drawing either CAD or hand drawn.  Prepare production plan, materials lists and costing/ordering; record progress in design portfolio. |
| **Term 2**  1–2 | **Safety**   * use correctly personal protective equipment (PPE) where applicable * demonstrate occupational safety and health (OSH) practices appropriate to tasks being undertaken in workshops * apply risk management strategies in the workshop/studio * assess the condition of tools and machinery manage a production plan |
|  | **Production management**   * maintain a production plan * maintain time management while using tools, equipment and machinery to complete production * follow instructions from plans * maintain safety requirements * record changes to materials lists or costing * record regular journal/diary entries * use ongoing evaluation techniques: diary, journal or portfolio notes and use of photography to record ongoing progress/decision changes made to the project   **Task 4**  Production skills; apply and practice safety during task/s to develop practical hand and machine skills. Modelling, prototype or toile. |
| 3–6 | **Task 5**  Manufacture of proposed product; using prepared production plan, materials and available equipment; record progress in design portfolio. |
| Examination week  7–8 | **Task 7:** Semester 1 written examination – a representative sample of the syllabus content from Semester 1 – using a modified examination design brief from the Year 12 syllabus – 2 hours |
| 9–10 | **Task 5**  Manufacture of proposed product; using prepared production plan, materials and available equipment; record progress in design portfolio. |
| 10 | **Design fundamentals and skills**  **Evaluate**  Final product against design brief, initial design and performance criteria related to needs, values and beliefs of the end user.  **Task 6**  Presentation of completed product  Evaluation of completed product; written report on and photographs of completed product. |

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# Materials Design and Technology – ATAR Year 11

## Unit 2

#### Semester 2

| **Week** | **Key teaching points** |
| --- | --- |
| **Term 3**  1  2–3 | Overview of unit and assessment requirements  Re-introduction to design process, and development of a design portfolio   * design for others – statement of intent |
| **Design fundamentals and skills**   * investigate * design for others * needs, values and beliefs of the designer/developer * needs, values and beliefs of the client/target audience/market * performance criteria related to needs, values and beliefs of the end user * historical, social and cultural sources of design inspiration * specific design characteristics/features of * products * designers * industries * application of design fundamentals and factors affecting design  |  |  | | --- | --- | | * aesthetics | * ergonomics | | * function | * anthropometric data | | * safety | * cost | | * environmental impact and considerations | |   **Task 8**  Investigate and develop ideas from:   * needs, values and beliefs * performance criteria * historical, social and cultural sources of design inspiration * specific design characteristics/features of; products, designers and industries * application of design fundamentals and factors affecting design. |
| 3 | **Nature and properties of materials**   * identify the properties and structures of materials * investigate the properties and structures of materials   **Task 9**  Investigate materials. Research materials suitable for the development of a solution, and report on nature and properties of materials. |
| 4 | **Materials in context**   * research examples of sustainability with regards to: * sustainable metal materials * sustainable production processes   **Task 10**  Investigate materials in context.  Research examples of sustainability with regard to:   * sustainable materials * sustainable production processes. |
| 5–7 | **Design fundamentals and skills**  **Devise**  Developing a solution; through concept drawings, working drawings, patterns or templates.  Final drawn proposal.  Presentation drawing of proposed solution – colour rendered pictorial 3D drawing either CAD or hand drawn.  **Task 11**  Apply skills and techniques listed in Unit 2 of the Year 11 ATAR syllabus to devise and present a design solution. |
| 8–9 | **Design fundamentals and skills**  **Devise**  **Task 12**  Prepare production plan, materials lists and costing/ordering; record progress in design portfolio. |
| **Term 4**  1  2–4 | **Safety**   * correctly use personal protective equipment (PPE) where applicable * conduct risk assessment for using specific tools/machinery * demonstrate occupational safety and health practices appropriate to tasks being undertaken in workshops * apply risk management strategies in the workshop/studio * recognise need and purpose of materials safety data (MSD) with regard to storage and handling of hazardous substances and hazardous operations appropriate to situation   **Production management**   * manage a production plan * maintain a detailed production plan * maintain time management while using tools, equipment and machinery to complete production * adhere to sequential instructions * apply safety and risk management * record changes to materials lists or costing * record regular journal/diary entries * use ongoing evaluation techniques: diary, journal or portfolio notes and use of photography to record ongoing progress/decision changes made to the project   **Task 13**  Manufacture of proposed product; using prepared production plan, materials and available equipment; record progress in design portfolio. |
| Examination  week  5–6 | **Task 15:** Semester 2 written examination – a representative sample of selected syllabus content  – using the examination design brief from the Year 12 syllabus – 2 hours |
| 7–9 | **Task 13**  Manufacture of proposed product; using prepared production plan, materials and available equipment; record progress in design portfolio. |
| 9 | **Design fundamentals and skills**  **Evaluate**   * design and production processes * using a production plan/journal/diary and accompanying photographic evidence to record ongoing evaluation * product against design brief, initial design and performance criteria related to needs, values and beliefs of the end user   **Task 14**  Evaluation of completed product; written report on and photographs of completed product. |