**Sample Course Outline**

Materials Design and Technology

ATAR Year 12

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Sample course outline

Materials Design and Technology – ATAR Year 12

Unit 3 and Unit 4

Semester 1

| **Week** | **Key teaching points** |
| --- | --- |
| 1–3 | **Design fundamentals and skills**   * investigate   + target audience/market, demand, niche market design needs, values and trends   + performance criteria related to needs, values and beliefs of the developer and end user   + historical, social, cultural and political sources of design inspiration   + design fundamentals and factors affecting design  |  |  | | --- | --- | | * + aesthetics | * + environmental impact and considerations | | * + function | * + sustainability issues | | * + safety | * + ergonomics | | * + cost | * + anthropometric data |   **Task 1:** Establish a design process and design portfolio; statement of intent, investigate and devise through the development of a design portfolio. Develop a statement of intent or design proposal |
| 4–5 | Task 2: Investigate design proposal, client needs, market survey, design fundamentals and factors affecting designNature and properties of materials As per Unit 3 context content Nature and properties of materials  **Task 3:** Investigate and report on the nature and properties of materials   * research and identify the nature and properties of materials suitable for the development of a solution in context, as per Unit 3 of the syllabus |
| 6–9 | **Design fundamentals and skills**   * devise   + using communication and documentation techniques   + sketching and drawing   + rendering   + annotating drawings   + sampling   + modelling   + applying elements and principles of design where applicable in context  |  |  |  |  | | --- | --- | --- | --- | | * + line | * + colour | * + rhythm | * + dominance | | * + shape | * + tone | * + radiation | * + proportion | | * + form | * + repetition | * + harmony | * + balance | | * + texture | * + gradation | * + contrast | * + unity |  * + applying rapid concept development techniques to generate a variety of design ideas   + design development   + collate best ideas that have been developed using annotated hand or computer-generated graphics – front, back views and detailed sketches as necessary   + review and justify best ideas using design brief and performance criteria   + 2D illustrations – working/technical drawings   + 3D illustration – presentation drawings   + inspiration/concept/storyboard development and presentation   + production plan   + materials list   + estimated and actual costing for all materials and components   + production plan, including time line * evaluate   + product against design brief, initial design and performance criteria related to needs, values and beliefs of the developer and end user   + design and production processes, making recommendations for improvement  Use of technologySkills and techniques  * ICT, portfolio development and communication skills   + client and market research techniques   + client presentation techniques   + photography – ongoing record of progress and processes used and final product   + documenting presentations and evaluations * context appropriate drawing and relevant technical information to produce the final product to demonstrate:   + sketching rapid concept developments   + 3D presentation drawings   + rendering techniques   + 2D working drawings or using templates   + inspiration/concept or storyboard development and presentation   + design and making specification sheets   **Task 4:** Devise and develop concepts through concept drawings, patterns or templates  **Task 5:** Devise a solution through working drawings, patterns or templates  **Task 6:** Presentation drawing of proposed solution – colour-rendered pictorial 3D drawing, either CAD or hand drawn  **Task 7:** Production management plan; prepare materials list, estimated and actual costing for all materials/components, production plan and time line |
| 10–13 | **Use of technology**   * workroom/studio terminology appropriate to context * operate machinery and tools appropriate to context   **Safety**   * correct use of personal protective equipment (PPE) where applicable * conduct risk assessment for using specific tools and equipment * demonstrate occupational safety and health (OSH) practices appropriate to tasks being undertaken in workshops * apply proactive measures for risk management in the workshop/studio * recognise need and purpose of materials safety data (MSD) with regard to storage and handling of hazardous substances appropriate to situation   **Production management**   * manage production processes independently * diary, journal and folio note entries   **Task 8:** Pre-production skills – task/s to demonstrate safe working practices and develop practical hand and machine skills through modelling, prototype or toile making  **Materials in context**   * factors that have affected manufacturing processes * impact production, processing and use of materials has had on society and the environment   **Task 9:** Research materials in context, as per syllabus context content dot points |
| 14 | Preparation for production and/or examination |
| 15  Examination week | Task 10: Semester 1 Written examination – a representative sample of the syllabus content from Semester 1 – using a modified examination design brief from the syllabus – length two and a half hours |

Semester 2

| **Week** | **Key teaching points** |
| --- | --- |
| 1–2 | **Materials in context**   * influence of globalisation on the local, national and international industries * research and analyse relationships between product innovation, lifestyle choices, and consumer demand * explore green design principles and the life cycle of a product   **Nature and properties of materials**  As per context content such as   * analyse context materials * test materials’ properties * characteristics of innovations and emerging technology * finishing processes   As per Unit 4 context content dot points  **Task 11:** Research materials in context   * investigate and report on the materials in context * research and identify the nature and properties of materials suitable for the development of a solution in context, as per Unit 4 syllabus dot points |
| 2–9 | **Use of technology**  **Skills and techniques**   * ICT, folio and communication skills in:   + client and market research techniques   + client presentation techniques   + photography, for ongoing record of progress and processes used, in creating final product * apply graphics skills in:   + sketching, including rapid concept development   + 3D presentation drawings   + rendering techniques   + 2D working drawings or using templates   + inspiration/concept or storyboard development and presentation * produce specification sheets * apply methods of testing materials and techniques as required * use design and production procedures to integrate materials * apply skills in reading, interpreting and adapting plan/patterns/templates appropriate to context * independently operate machinery and tools appropriate to context * use clear, detailed presentation skills to set out, develop and present a folio featuring all elements of the design process   **Safety**   * correct use of personal protective equipment (PPE) where applicable * occupational safety and health (OSH) practices appropriate to tasks being undertaken in workshops * apply proactive measures for risk management in the workshop/studio * recognise the need and purpose of materials safety data (MSD) with regards to storage and handling of hazardous substances * discuss the consequences of hazardous operations and identify and manage risks in and around the workshop/studio * examine OSH issues and legal implications associated with designing and producing materials products for the consumer market   **Production management**   * manage production processes independently * diary, journal and portfolio note entries   **Task 12:** Production management  Manufacture proposed product. Use prepared production plan, materials and available equipment; record progress in design portfolio |
| 10–11 | **Design fundamentals and skills**   * justify selection of materials against comprehensive design needs, as well as the functional and aesthetic properties of materials * evaluate   + product against design brief, initial design and performance criteria related to needs, values and beliefs of the developer and end user   + design and production processes, making recommendations for improvement   **Task 13 Part A:** Practical final product evaluation  Evaluation of completed product; written report on, and photographs of the completed product |
| 12 | **Task 13 Part B:** Portfolio presentation and final product presentation  Preparation for completed portfolio – submission; last week of September  Preparation for examinations |
| Examination  week | **Task 14:** Semester 2 Written examination – a representative sample of selected syllabus content – using the examination design brief from the syllabus – length two and a half hours |