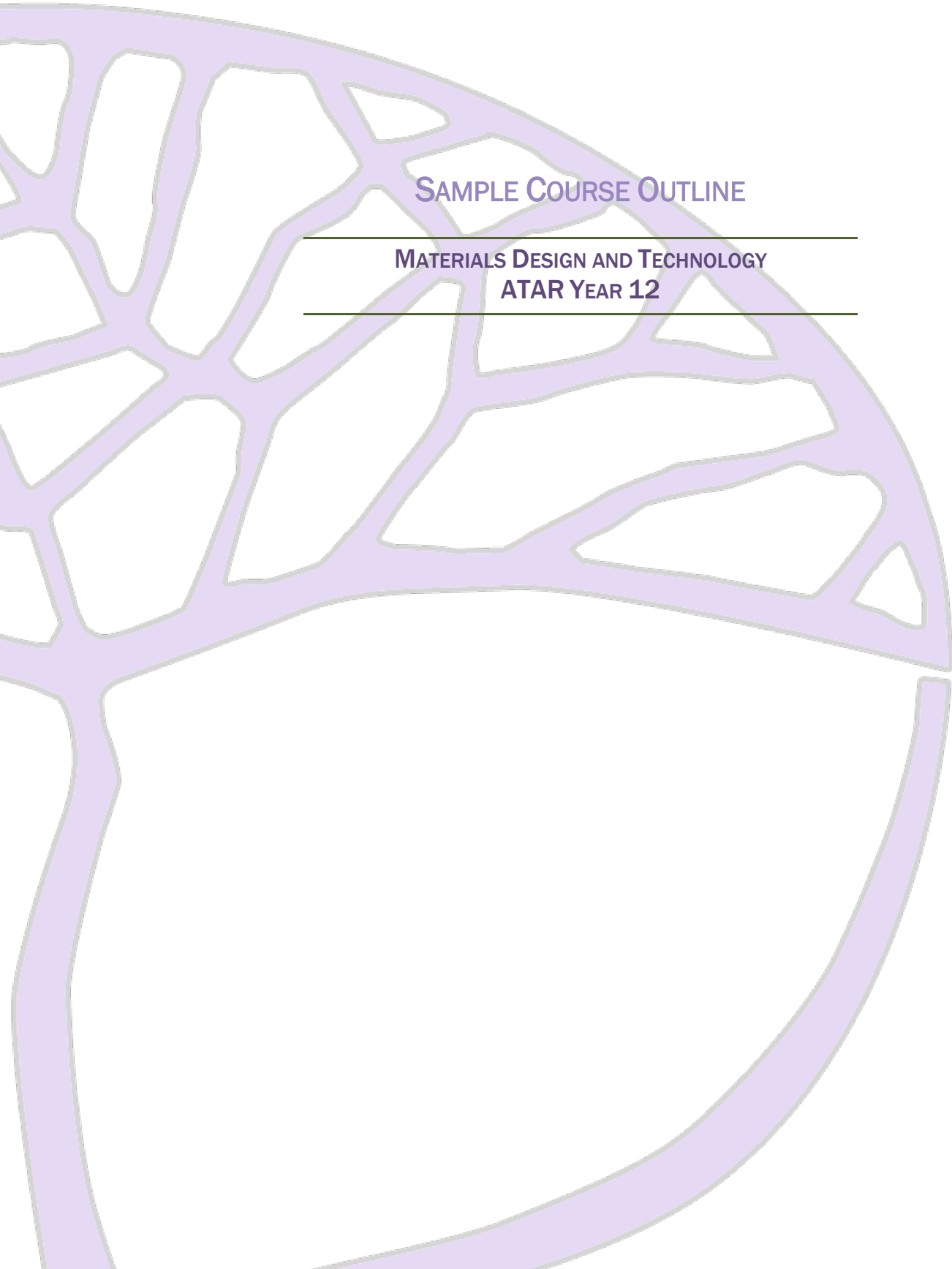




SAMPLE COURSE OUTLINE

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	<p>Design fundamentals and skills</p> <ul style="list-style-type: none"> • investigate <ul style="list-style-type: none"> ▪ 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 <ul style="list-style-type: none"> ○ aesthetics ○ function ○ safety ○ cost ○ environmental impact and considerations ○ sustainability issues ○ ergonomics ○ anthropometric data <p>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</p>
4–5	<p>Task 2: Investigate design proposal, client needs, market survey, design fundamentals and factors affecting design</p> <p>Nature and properties of materials</p> <p>As per Unit 3 context content Nature and properties of materials</p> <p>Task 3: Investigate and report on the nature and properties of materials</p> <ul style="list-style-type: none"> • 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	<p>Design fundamentals and skills</p> <ul style="list-style-type: none"> • devise <ul style="list-style-type: none"> ▪ using communication and documentation techniques <ul style="list-style-type: none"> ○ sketching and drawing ○ rendering ○ annotating drawings ○ sampling ○ modelling ▪ applying elements and principles of design where applicable in context <ul style="list-style-type: none"> ○ line ○ shape ○ form ○ texture ○ colour ○ tone ○ repetition ○ gradation ○ rhythm ○ radiation ○ harmony ○ contrast ○ dominance ○ proportion ○ balance ○ unity ▪ applying rapid concept development techniques to generate a variety of design ideas ▪ design development <ul style="list-style-type: none"> ○ 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 <ul style="list-style-type: none"> ○ materials list ○ estimated and actual costing for all materials and components ○ production plan, including time line • evaluate

Week	Key teaching points
	<ul style="list-style-type: none"> ▪ 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 <p>Use of technology</p> <p>Skills and techniques</p> <ul style="list-style-type: none"> • ICT, portfolio development and communication skills <ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ▪ 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 <p>Task 4: Devise and develop concepts through concept drawings, patterns or templates</p> <p>Task 5: Devise a solution through working drawings, patterns or templates</p> <p>Task 6: Presentation drawing of proposed solution – colour-rendered pictorial 3D drawing, either CAD or hand drawn</p> <p>Task 7: Production management plan; prepare materials list, estimated and actual costing for all materials/components, production plan and time line</p>
10–13	<p>Use of technology</p> <ul style="list-style-type: none"> • workroom/studio terminology appropriate to context • operate machinery and tools appropriate to context <p>Safety</p> <ul style="list-style-type: none"> • 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 <p>Production management</p> <ul style="list-style-type: none"> • manage production processes independently • diary, journal and folio note entries <p>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</p> <p>Materials in context</p> <ul style="list-style-type: none"> • factors that have affected manufacturing processes • impact production, processing and use of materials has had on society and the environment <p>Task 9: Research materials in context, as per syllabus context content dot points</p>
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	<p>Materials in context</p> <ul style="list-style-type: none"> 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 <p>Nature and properties of materials</p> <p>As per context content such as</p> <ul style="list-style-type: none"> analyse context materials test materials' properties characteristics of innovations and emerging technology finishing processes <p>As per Unit 4 context content dot points</p> <p>Task 11: Research materials in context</p> <ul style="list-style-type: none"> 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	<p>Use of technology</p> <p>Skills and techniques</p> <ul style="list-style-type: none"> ICT, folio and communication skills in: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 <p>Safety</p> <ul style="list-style-type: none"> 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 <p>Production management</p> <ul style="list-style-type: none"> manage production processes independently diary, journal and portfolio note entries <p>Task 12: Production management</p>

Week	Key teaching points
	Manufacture proposed product. Use prepared production plan, materials and available equipment; record progress in design portfolio
10–11	<p>Design fundamentals and skills</p> <ul style="list-style-type: none"> • justify selection of materials against comprehensive design needs, as well as the functional and aesthetic properties of materials • evaluate <ul style="list-style-type: none"> ▪ 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 <p>Task 13 Part A: Practical final product evaluation Evaluation of completed product; written report on, and photographs of the completed product</p>
12	<p>Task 13 Part B: Portfolio presentation and final product presentation Preparation for completed portfolio – submission; last week of September Preparation for examinations</p>
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