Government of **Western Australia**
School Curriculum and Standards Authority

SAMPLE COURSE OUTLINE

MATERIALS DESIGN AND TECHNOLOGY
GENERAL YEAR 12

Sample course outline

Materials Design and Technology – General Year 12

Unit 3 and Unit 4

Semester 1

Week	Key teaching points
1–2	Overview of unit and assessment requirements Introduction to design process **Design fundamentals and skills** • investigate: ▪ designs in practice ▪ needs, values and beliefs of the designer/developer ▪ sources of design inspiration ▪ performance criteria for products ▪ application of design fundamentals and factors affecting design **Task 1:** Design project one • development of a design portfolio • statement of intent, and investigation
3–4	**Materials in context** • the uses and classification of the types of materials within context • the environmental impacts as per context: ▪ raw material extraction and processing ▪ end-of-life of a product – recycling and safe disposal **Nature and properties of materials as per context content such as** • investigate context materials • materials structure • types and classifications • aesthetic and physical properties **Task 2:** Investigate materials and production methods • research materials and processes suitable for the development of a solution
5–7	**Design fundamentals and skills** • devise ▪ using communication and documentation techniques o sketching and drawing o rendering o annotating ▪ understanding the elements and principles of design where applicable in context o line o contrast o form o balance o shape o proportion o texture o colour ▪ rapid concept development techniques to generate design ideas and concepts ▪ final design concept using design brief and performance criteria ▪ review of best idea using design brief and performance criteria ▪ design solution o develop best concept using annotated hand or computer generated graphics (front, back views and detailed sketches as necessary) o 2D illustrations (working/technical drawings) o 3D illustration (presentation drawings) o inspiration/concept/storyboard ▪ production plans o materials list

Week	Key teaching points
	o costing for all materials components o time line for stages of production **Skills and techniques** • ICT, portfolio development and communication skills ▪ 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 • select appropriate materials and calculate the quantities of materials required to complete the project **Task 3:** Devise a solution for project one, and present in a design portfolio
7–8	**Skills and techniques** • use workroom/studio terminology appropriate to context • select appropriate materials and calculate the correct amount required to order and purchase materials to complete the project • with supervision, operate machinery and tools appropriate to context **Safety** • correct use of personal protective equipment (PPE) where applicable • 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 **Task 4:** Pre-production skills • develop production skills; apply safety and practical task/s to develop hand and machine skills through producing a model, prototype or toile
9–14	**Production management** • production planning: ▪ maintain a production plan ▪ maintain time management while using tools, equipment and machinery to complete production: o follow instructions from plans o maintain safety requirements ▪ record changes to materials lists or costing ▪ record regular journal/diary entries • ongoing evaluation techniques: diary, journal or portfolio notes and use of photography to record ongoing progress/decision changes made to the project **Task 5:** Production of proposed project one; use prepared production plan, materials and available equipment; record progress in design portfolio
13	**Externally set task** All students enrolled in the Materials Design and Technology General Year 12 course will complete the externally set task developed by the Authority. Schools are required to administer this task in Term 2 at a time prescribed by the Authority.
14	**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

Week	Key teaching points
	Task 6: Evaluation of completed project one; written report on, and photographs of, completed product
15–16	Overview of Unit 4 and assessment requirements Reintroduction to design process, and development of a design portfolio **Design fundamentals and skills** • investigate: ▪ 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 ▪ application of design fundamentals and factors affecting design **Skills 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 • develop context appropriate drawings and relevant technical information to produce the final product **Task 7:** Design project two • determine design brief • investigate; ▪ needs, values and beliefs of the designer/developer/client/target/market ▪ performance criteria related to needs, values and beliefs of the end user ▪ application of design fundamentals and factors affecting design

Semester 2

Week	Key teaching points
1–2	**Materials in context** • identification of examples of recycling methods for different materials in context **Task 8:** Investigate materials Research and report on materials and recycling methods for different materials
3–5	**Nature and properties of materials as per context content** **Design fundamentals and skills** • devise: ▪ communication and documentation techniques ▪ applying of elements and principles of design where applicable in context ▪ rapid concept development techniques, images and annotation ▪ design development ▪ production plan ▪ materials list ▪ estimated and actual costing for all materials and components ▪ production plan and time line **Task 9:** Devise a solution for project two to include: • investigated context materials as listed in Unit 4 • annotated pictorial drawings of ideas to a final drawn proposal • lists of materials, parts and components • working drawings – detailed orthogonal drawings • production plan on a timeline
6–11	**Safety** • correct use of personal protective equipment (PPE) where applicable • conduct risk assessment for using specific tools/machinery • demonstrate occupational safety and health (OSH) 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** • production planning: ▪ maintain a detailed production plan ▪ maintain time management while using tools, equipment and machinery to complete production: o adhere to sequential instructions o apply safety and risk management ▪ record changes to materials lists or costing ▪ record regular journal/diary entries • ongoing evaluation techniques: diary, journal or portfolio notes and use of photography to record ongoing progress/decision changes made to the project **Task 10:** Production of proposed project two; use prepared production plan, materials and available equipment; record progress in design portfolio
11–12	**Design fundamentals and skills** • evaluate: ▪ design and production processes ▪ 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 11:** Evaluation of completed project two; written report on, and photographs of, completed product