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

Materials Design and Technology (Wood)
General Course Year 12

Selected Unit 3 syllabus content for the

Externally set task 2026

This document is an extract from the *Materials Design and Technology General Course Year 12 syllabus*, featuring all of the content for Unit 3. The content that has been highlighted in the document is the content on which the Externally set task (EST) for 2026 will be based.

All students enrolled in the course are required to complete an EST. The EST is an assessment task which is set by the Authority and distributed to schools for administering to students. The EST will be administered in schools during Term 2, 2026 under standard test conditions. The EST will take 50 minutes.

The EST will be marked by teachers in each school using a marking key provided by the Authority. The EST is included in the assessment table in the syllabus as a separate assessment type with a weighting of 15% for the pair of units.

Unit 3

Unit description

Students develop an understanding of the elements and fundamentals of design and consider human factors involved in the design, production and use of their projects. They develop creative thinking strategies and work on design projects within specified constraints. Students learn about the classification and properties of a variety of materials and make appropriate materials selection for design needs.

Students learn about manufacturing and production skills and techniques. They develop the skills and techniques appropriate to the materials being used and gain practice in planning and managing processes through the production of design project. They learn about risk management and ongoing evaluation processes.

Unit content

An understanding of the year 11 content is assumed knowledge for students in year 12. It is recommended that students studying Unit 3 and Unit 4 have completed Unit 1 and Unit 2.

This unit includes the knowledge, understandings and skills described below.

Common content

Design

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
    - aesthetics
    - function
    - cost
    - measurements
    - environmental impact and considerations
    - safety
- devise
  - using communication and documentation techniques
    - sketching and drawing
    - rendering
    - annotating
  - understanding the elements and principles of design where applicable in context
    - line
    - shape
    - form
    - texture
    - contrast
    - proportion
    - balance
    - 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
  - develop best concept using annotated hand or computer generated graphics (front, back views and detailed sketches as necessary)
  - 2D illustrations (working/technical drawings)
  - 3D illustration (presentation drawings)
  - inspiration/concept/storyboard
- production plans
  - materials list
  - costing for all materials components
  - stages of production

- evaluate
  - final product against design brief, initial design and performance criteria related to needs, values and beliefs of the end user

Use of technology

Skills and techniques

- ICT, portfolio development and communication skills
  - photography – 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
- select appropriate materials and calculate the quantities of materials required to complete the project
- with supervision, operate machinery and tools appropriate to context

Safety

- correct use of personal protective equipment (PPE) where applicable
- work health and safety practices appropriate to tasks being undertaken in workshops
- apply risk management strategies in the workshop/studio
- assess the condition of tools and machinery

Production management

- production planning
  - using tools, equipment and machinery to complete production
    - follow instructions from plans
    - maintain safety requirements
  - record changes to materials lists or costing
- ongoing evaluation techniques: progress/decision changes made to the project

Wood context content

Materials

Nature and properties of materials

- wood types and classification
  - natural wood
    - hardwood – jarrah, Australian oak
    - soft wood – radiata pine, Douglas fir
  - man-made board
    - plywood – interior, exterior, marine
    - medium density fibreboards – plain, veneered
    - particle board
- difference between rough sawn and DAR timbers
- identification of common timber sizes, lengths, widths and thicknesses
- physical properties
  - durability
  - strength
  - abrasion resistance
  - flexibility
  - dimensional stability
  - shrink resistance
- classification of adhesives for timber
  - PVA
  - epoxy
  - cyanoacrylate
  - latex/rubber based

Materials in context

- the uses and classification of the major timber types for:
  - furniture products
  - building and construction materials
  - consumer products
- the environmental impact of producing timber
  - growth/harvesting
  - milling/conversion
  - end-of-life of a product – recycling and safe disposal

Use of technology

Skills and techniques

- ICT skills related to design development and presentation
- demonstrate drawing skills
  - drawing, reading and interpreting plans/ patterns/templates
  - isometric and pictorial hand sketches for project development
  - dimensioned orthogonal drawing in 3rd angle for working drawing

- select and safely apply technical skills using a range of tools and machinery that could include:
  - bandsaw
  - drill press
  - various grinders or carving tools
  - sanding machines
  - portable or fixed routers
  - radial arm saw or drop saw or compound mitre saw
  - biscuit joiner
  - domino joiner
  - table saw
  - mortise machine
  - wood lathe
- use hand tools and/or machinery to fabricate at least two of the following joints
  - widening joint
  - finger joint
  - cross-halving joint
  - dovetail joint
  - housing joint
  - mortise and tenon
  - bridle joint
  - biscuit joint
- select and use the correct type and grade of abrasive paper
- prepare correctly a surface for finishing
- apply appropriate finishing techniques using brush or cloth and/or spray gun