



# **Building and Construction**

## **General Course Year 12**

### **Selected Unit 3 syllabus content for the**

### **Externally set task 2018**

This document is an extract from the *Building and Construction 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 2018 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, 2018 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

This unit explores properties of common construction materials (timber, metals, concrete, grout, brickwork, block work, insulation, mortar and paint); their mechanical properties under load and flexural actions; and their use in construction. Concepts in space and computation are developed. Students practice reading drawn/drafted information as applied to building. Documentation for small projects is developed. The unit explores processes in contexts drawn from building, landscaping, earthwork, projects involving different energy use, and the recycling of building materials.

## 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.

Design, planning and management

### Planning and management

- the structure of the building and construction industries
- stages within a simple project management plan

### Design processes

- research and investigate different:
  - design ideas
  - structural configurations
  - assembly of components
- prepare a design brief using rapid concept development, brainstorming, and critical thinking
- use ICT and manual presentation skills
- devise similar design ideas using annotated graphics and sketches
- review a design's suitability against design needs, including investigation of construction methods
- generate suitable 2D drawings with conventions for designed solution
- manage production of a solution, including a sequence of manufacture
- evaluate the result of the project against design criteria using simple statements

### Drafting

- read and draw plans utilising fundamentals of practical geometry with orthogonal projection and industry conventions
- apply appropriate scaling of drawings

- estimate quantities
  - perimeter of drawn shapes
  - area of drawn shapes
  - volume of materials
- operate levelling equipment
- operate surveying equipment
- recognise and use industry specific conventions and building and construction terminology
- set out construction tasks using string lines and formwork

## Materials

### Properties and selection

- material properties
  - hardness
  - elasticity
  - conductivity
  - flexibility
  - strength
- natural and pre-made construction materials appropriate for different applications
  - timber
  - metals
  - soil types
  - masonry
  - plastics
  - glass

### Working with materials

Students demonstrate the use of:

- wood or metal frames and structures, including supportive trusses in construction
- different types of materials and construction methods
  - timber
    - joinery/cabinet work
  - masonry
    - brick
    - concrete
  - plasterboard
    - gyprock
    - jointing/flushing
  - insulation
    - thermal
    - acoustic

- roof coverings
  - sheet
  - tiles
- floor systems
  - sub-floors
  - floor sheeting/boards
- techniques to lay and finish paving with complex angular patterns, including:
  - running bond and stack bond patterns
  - basket weave
- straight line brick/block laying and pointing
- lime, mortar and cement
- materials and processes to produce a range of surface finishes
- welding procedures and materials
  - oxy/acetylene
  - electric arc
  - MIG welding
- the removal of burrs, sharp edges, welding slag and spatter
- a range of common fasteners associated with building and construction
- various portable power tools, equipment and hand tools employed in the building and construction industry
- occupational safety and health (OSH) rules and regulations relating to the use of materials and processes.

## **Systems**

### **Structures and services**

- two-dimensional forces on trusses, frames and structural components
- the provisions for the supply of:
  - on-site gas
  - electric power
  - water
  - drainage
  - sewerage

### **Environment and sustainability**

- building insulation and its purpose
- the types of energy (electrical, heat, mechanical) used during construction
- recycling of building materials