**Sample Course Outline**

Building and Construction

General Year 11

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Sample course outline

Building and Construction – General Year 11

Unit 1

Semester 1

| **Week** | **Key teaching points** |
| --- | --- |
| Term 11–2 | Introduction to course, workshop and assessment tasks**Working with materials*** identify and apply occupational safety and health (OSH) rules and regulations relating to the use of materials and processes

**Task 1:** Safety in the workshop – Worksafe website; Smartmove certificates |
| 2–4 | **Drafting** * read and interpret plans
* apply fundamentals of practical geometry
* right angles, triangulation, 3/4/5 triangles, level, squareness, plumbline
* use orthogonal projection and drafting conventions
* read and convert scaled drawings to actual size
* operate levelling equipment
* recognise industry specific conventions and building and construction terminology

**Task 2:** Drafting exercises |
| 4–6 | **Planning and management*** the various people, trades and their roles in the construction industry
* the scope of the industry, such as in building, utilities and resource industries

**Design processes*** investigate existing and similar designs using design considerations of:
* function, ergonomics, cultural and architectural styles
* collect examples of site and project information
* identify building components
* devise design ideas using annotated graphics and sketches reviewing the design’s suitability
* develop a design solution using hand generated solution drawings with conventions

**Task 3 Part A:** Apply planning and management, and design processes for a residential backyard design project |
| 6–8 | **Properties and selection*** mechanical properties in terms of:
* hardness, elasticity, conductivity, flexibility, and strength
* materials appropriate for a chosen application
* surface finishes

**Design processes** * manage production of a solution, including a simple sequence of manufacture

**Task 3 Part B:** Construct model residential backyard projectSelect appropriate materials, model project |
| 8 | **Design processes*** evaluate the result of the project against design criteria using simple statements

**Task 3 Part C:** Evaluation of model of residential backyard project |
| 8–9 | **Systems – Environment and sustainability*** ways for sustainable practices in building and construction
* types of environmentally friendly alternatives in methods of building and construction

**Task 4 Part A:** Assignment: sustainable practices in building and construction |
| Term 21–8 | **Working with materials*** use a variety of standard building materials, such as:
* bricks, pavers, mortar, cement, tiles, steel, timber
* develop skills in:
* laying and finishing of simple paving
* straight line bricklaying
* wall and floor tiling setting out, procedure and tool usage
* mixing of mortar, grout and cement and their correct usage
* cleaning up procedure at completion of the activities
* identification and production of a range of surface finishes
* oxy welding procedure: purpose, materials and equipment
* electric arc welding procedure: purpose, materials and equipment
* methods of cutting and fixing timber for frame and carcass construction
* correct use of various portable power tools, equipment and hand tools within the building and construction industry: measuring tools, cutting tools, lifting equipment
* non-licensed plumbing activities
* identify and apply occupational safety and health (OSH) rules and regulations relating to the use of materials and processes

**Task 5 Part A:** Building exercisesMaterials – properties and selection, working with building materials |
| **Task 5 Part B:** Construction exercisesMaterials – properties and selection, working with construction materials |
| **Task 5 Part C:** Fabrication exercises (welding)Materials – properties and selection, working with fabrication materials |
| 9–10  | **Systems – Structures and services*** different structures, structural components, joints and trusses
* methods for basic on-site water supply, drainage and sewerage provision

**Task 4 Part B:** Assignment: structure and components, and onsite services |

Unit 2

Semester 2

| **Week** | **Key teaching points** |
| --- | --- |
| Term 31 | Introduction to Unit 2 course, workshop and tasks**Task 6**: Revisit and reinforce safety in the workshop – rules and regulations |
| 2–3 | **Planning and management*** the structure of the building and construction industries
* the integrated relationships between people and regulatory bodies

**Drafting** * read and draw plans utilising fundamentals of practical geometry with orthogonal projection
* estimate quantities
* perimeter of drawn shapes
* area of drawn shapes
* volume of materials
* apply appropriate scaling of drawings
* operate levelling equipment
* recognise industry specific conventions
* use building and construction terminology

**Task 7:** Drafting exercises |
| 4–6 | **Design processes** * investigate different
* design ideas
* structural configurations
* assembly of components
* use ICT and manual presentation skills
* devise similar design ideas using annotated graphics and sketches
* review the 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 simple sequence of manufacture
* evaluate the result of the project against design criteria using simple statements

**Task 8 Part A:** Integrated materials fabrication design projectPlanning and management, design process |
| 7–10 | Properties and selection* mechanical properties of materials under load (tension or compression)
* hardness, elasticity, conductivity, flexibility, strength
* selection of materials based on properties appropriate for a chosen application
* alternative surface finishes

**Working with materials*** apply occupational safety and health (OSH) rules and regulations relating to the use of materials and processes

**Task 8 Part B:** Construction of integrated materials fabrication design project* investigate materials and properties for working in construction
* select appropriate materials based on properties required chosen application
 |
| Term 41–7 | **Working with materials*** selection of materials based on properties appropriate for a chosen application
* use standard building materials
* bricks, pavers, mortar, cement, tiles, steel, timber
* demonstrate
* timber construction
* laying and finishing paving
* straight line bricklaying
* wall and floor tiling: setting out, procedure and tool usage
* mixing of mortar, grout and cement and their correct usage
* cleaning procedures at completion of the activities
* production of a range of surface finishes
* oxy welding procedure: purpose, materials and equipment
* electric arc welding procedure: purpose, materials and equipment
* MIG welding procedure: purpose, materials and equipment
* different types of joining methods used in building and construction
* safe use of various portable power tools, equipment and hand tools within the building and construction industry: measuring tools, cutting tools, lifting equipment
* non-licensed plumbing activities
* sheet metal work, including bracing and strapping
* apply occupational safety and health (OSH) rules and regulations relating to the use of materials and processes

**Task 9 Part A:** Building exercisesMaterials – properties and selection, working with building materials |
| **Task 9 Part B:** Construction exercisesMaterials – properties and selection, working with construction materials |
| **Task 9 Part C:** Fabrication exercises (MIG welding)Materials – properties and selection, working with fabrication materials |
| 8–10 | **Design processes*** evaluate the result of the project against design criteria using simple statements

**Task 8 Part C:** Evaluate finished materials fabrication design project **Systems – Structures and services*** different structures, structural components, joints and trusses
* basic on-site water supply, drainage and sewerage provision

**Environment and sustainability*** cultural influences on buildings and architecture
* sustainable building and construction methods and their effect on environments

**Task 10 Part A:** Structures and services**Task 10 Part B:** Listing and examples of influences of culture on buildings and architecture |