



Australian Government

Department of Education, Employment and Workplace Relations

LMFFT5011B Develop, trial and evaluate prototypes

Revision Number: 1

LMFFT5011B Develop, trial and evaluate prototypes

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit covers the development of specifications, the identification and selection of materials and processes, the production and trialing of prototypes and the completion of evaluation documentation.
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Application of the Unit

Application of the unit	
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	Nil	

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Develop prototype specifications	1.1. The purpose and outline requirements for the prototype are identified from design concepts and/or customer requirements 1.2. Materials are identified following detailed analysis of the options 1.3. Detailed prototype design specifications are prepared and documented 1.4. Construction requirements and methods are identified appropriate for the materials to be used 1.5. Ergonomic requirements are identified, clarified and satisfied throughout the work process
2. Plan and prepare prototype construction	2.1. Work plan for the prototype construction is drafted 2.2. Workplace health and safety requirements, including personal protection needs, are observed throughout the work 2.3. Compatibility of materials in specifications is checked and any discrepancies reported 2.4. Steps or stages in construction are identified, noting checkpoints for quality checks 2.5. Suitable work area is located and cleared ready for work 2.6. Materials and consumables to meet specifications are prepared for use 2.7. Equipment and accessories suitable for working the specified material are prepared for use 2.8. Appropriate jigs and other construction aids are identified and where required adjusted to suit the work
3. Produce the prototype	3.1. Work plan is followed to produce the prototype 3.2. Checks are conducted at the identified points 3.3. Modifications to designs and plans are identified and recommended and managed within workplace procedures 3.4. Modifications to the plan are documented and followed 3.5. Prototype or sample is checked for compliance with specifications
4. Trial and evaluate the prototype	4.1. Trial objectives and processes are developed, specified and documented

ELEMENT	PERFORMANCE CRITERIA
	4.2. Personnel involved in the trial and evaluation are prepared for their responsibilities and functions 4.3. Trial equipment, tools and materials are prepared and certified prior to use 4.4. Prototype trials are conducted and results captured and recorded in accordance with the trial specification 4.5. Results of trials are evaluated and evaluation records and recommendations are processed in accordance with enterprise procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- collect, organise and understand information related to the prototype development including the relevant technical, regulatory, environmental and safety requirements
- communicate ideas and information to enable clarification of the development requirements, coordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems
- plan and organise activities, including the preparation and layout of the worksite and the obtaining of equipment, systems and materials to avoid any back tracking, workflow interruptions or wastage
- work with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- use mathematical ideas and techniques to correctly complete measurements, calculate area and dimensions, create accurate and scaled drawings, and estimate material requirements
- create and apply systematic problem solving techniques to anticipate problems, avoid re-working and wastage
- use the workplace technology related to the development, including calculators and measuring devices and computing/computer-aided systems

Required knowledge

- intellectual property law requirements
- the elements and principles of design
- trends and detailed knowledge of furniture construction
- destructive and non-destructive testing techniques and processes
- use of colour and other features
- the range, properties and characteristics of materials used
- safety and environmental aspects of relevant enterprise activities
- workplace procedures and reporting process
- relevant OHS legislation, regulatory requirements and codes of practice

Evidence Guide

EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Critical aspects of evidence

- Interpret work order, plans and specifications and locate and apply relevant information
- Apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- Follow work instructions, operating procedures and inspection practices to:
 - prevent damage to goods, equipment or products
 - maintain required production output and product quality
 - minimise the risk of injury to self or others
- Develop and evaluate a minimum of two different prototypes and:
 - develop the prototype specification
 - identify compatibility/incompatibility of materials, adhesives, fittings, fasteners, for the application
 - select and use appropriate materials, equipment and processes for the item being constructed
 - demonstrate how the design of the prototype components will influence the working lifetime of the item
 - ensure that the prototype satisfies the original or varied specification
 - prepare for and conduct evaluation trials
 - record outcomes and make recommendations for future activities
- Modify activities to cater for variations in workplace contexts and environment
- Work effectively with others

Resource implications

Access to real or appropriately simulated situations involving the development and trialing of prototypes

This includes real or simulated work areas, materials, equipment, and information on design concepts, customer requirements, quality standards, organisation procedures, relevant safety procedures and regulations.

EVIDENCE GUIDE	
Method of assessment	Assessment methods must confirm consistency, or the potential for consistency, of performance over time and in a range of workplace relevant contexts. Assessment should be by direct observation or work and questioning on underpinning knowledge. Assessment may be conducted over time and in conjunction with assessment of other units of competency.
Context of assessment	Assessment may occur on the job or in a simulated workplace facility with relevant design inputs, staff, process equipment, simulated work procedures and deadlines.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Unit scope

- This unit covers the work involved in developing, constructing, trialing and evaluating prototypes from design concepts and/or customer requirements
- Prototypes may be produced by hand, by using appropriate machines, tools and equipment or by computer assisted production and will reflect the finished products produced by the enterprise

Unit context

- OHS requirements include legislation, building codes, material safety management systems, hazardous substances and dangerous goods codes and safe operating procedures
- Work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, authorised handling procedures and organisation insurance requirements
- Work requires individuals to demonstrate conceptual, analytical and organisational ability, discretion, judgement and problem solving skills

Workplace environment

- The development and trialing of prototypes is undertaken in accordance with established enterprise procedures and practices
- This work may be carried out on a team basis or with the support of dedicated specialist personnel
- Customers may be internal or external

Machines/equipment may include:

- any machine typically used in the furnishing sector concerned
- microprocessor or computer-controlled machines
- both production and facility equipment used in the enterprise

RANGE STATEMENT	
Materials for prototypes	- those normally used by the enterprise in its production processes. They may include but are not limited to: - timber - metal alloys - glass - fabrics and textiles - plastics - leather - cardboard and paper - adhesives - fillers and finishes as appropriate
Personal protective equipment	Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices
Information and procedures	- Design concepts/customer requirements - Designer's/drawer's specifications and instructions - Work procedures/instructions - Organisation work specifications and requirements - Legislation/regulations/national or industry codes and practices relevant to the prototype/sample construction - Quality and Australian standards and procedures

Unit Sector(s)

Unit sector	Furnishing Technology
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Competency field

Competency field	
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Co-requisite units

Co-requisite units		