



Australian Government

MSFFDM4003 Construct and evaluate prototypes and samples

Release: 1

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Modification History

Release 1. Unit code and title changed. Application changed. Elements and Performance Criteria changed. Range of Conditions removed and relevant content moved to the Assessment Requirements. Assessment Requirements changed to remove duplication with Performance Criteria. Supersedes and is not equivalent to MSFFDT4005 Construct and evaluate furniture prototypes and samples, and MSFFT4006 Construct prototypes and samples.

Application

This unit describes the skills and knowledge required to construct and evaluate, or oversee the construction and evaluation of, prototypes and samples based on established plans, drawings or specifications. Prototypes may be produced by hand, by using appropriate machines, tools and equipment, or by computer-assisted production, and may require the application of joinery, construction and finishing techniques.

The unit applies to individuals working in an industry operation of any size, or a design studio environment, who produce prototypes, either alone or as part of an internal or external team.

No licensing or certification requirements apply to this unit at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Competency Field

Workshop practice

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Establish work requirements	1.1 Identify purpose of prototype or sample from prototype specifications 1.2 Identify materials specifications for item from prototype specifications and workplace documentation 1.3 Identify and verify ergonomic requirements from prototype specifications 1.4 Identify construction requirements and methods for materials being used from prototype specifications

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
2. Plan for prototype construction	2.1 Prepare work plan for item, including construction stages or steps, checkpoints for measurements and tests, and assembly methods, to ensure requirements will be met 2.2 Ensure work health and safety requirements, including personal protection needs, are met throughout the work 2.3 Verify design brief and work plan, including compatibility of materials, with appropriate personnel and in accordance with workplace procedures 2.4 Locate suitable work area and ensure it is ready for work operation in accordance with workplace procedures
3. Obtain materials and equipment	3.1 Acquire correct type and quantity of material and other components to be used from specifications and ensure they are ready for use 3.2 Select suitable equipment based on work requirements and selected materials, and check operational effectiveness in accordance with manufacturer specifications 3.3 Identify and adjust jigs and other construction aids to suit work
4. Construct the prototype or sample	4.1 Follow work plan to construct item, referencing any sketches and other job specifications 4.2 Conduct checks at identified points and in accordance with workplace procedures 4.3 Identify, document and implement, within workplace procedures, any required modifications to design or plan 4.4 Perform initial inspection of prototype or sample to ensure it is fit for purpose
5. Finalise the work sequence	5.1 Prepare product for finishing in accordance with design specification 5.2 Clean, maintain and store tools and equipment in accordance with manufacturer specifications 5.3 Clean and clear work area, including applying waste management strategies in accordance with workplace procedures 5.4 Complete required workplace documentation
6. Evaluate prototype or sample	6.1 Evaluate prototype or sample for functionality and aesthetic appeal against design brief

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	6.2 Assess elements and principles of design of prototype or sample against design brief 6.3 Assess technical integrity of prototype or sample against design brief 6.4 Verify that ergonomic requirements are met from design requirements 6.5 Modify prototype or sample as needed to satisfy requirements of design brief and document any unresolvable variations 6.6 Review prototype or sample with client to ensure it meets requirements 6.7 Record process faults in prototype or sample and report to appropriate personnel in accordance with workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

- Numeracy skills to interpret technical information and perform basic calculations relating to measurement and estimation.
- Reading skills to interpret specifications and work plans.
- Writing and oral communication skills to record and report on prototype work sequences and produce evaluations.

Other foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Release 1. Supersedes and not equivalent to MSFFDT4005 Construct and evaluate furniture prototypes and samples, and MSFFT4006 Construct prototypes and samples.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=0601ab95-583a-4e93-b2d4-cfb27b03ed73>

Assessment Requirements for MSFFDM4003 Construct and evaluate prototypes and samples

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Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and demonstrated the ability to:

- construct two different prototypes or samples from concept sketches and freehand development drawings, and in doing so:
 - interpret a design brief to apply design elements and principles
 - identify compatibility or incompatibility of materials, adhesives, fittings and fasteners for the application
 - select and apply appropriate joinery, construction and finishing techniques
 - select and use appropriate materials, equipment and processes for the item being constructed
 - show how the design of the prototype components relates to the expected life of the item
 - ensure that the prototype satisfies the original or varied specification.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- the function and features of a design brief, including:
 - the aims, objectives, milestones for the design project
 - target audience
 - budget
 - timeline
 - consultation requirements
 - colour requirements
 - image requirements
 - function
- the characteristics and behaviours of a broad range of materials, including:
 - scrap timber and manmade timber

- plastics
- metal and metal alloys
- stone
- glass
- fabrics and textiles
- fibreglass
- leather
- foam
- cardboard and paper products
- any other manipulable substance
- adhesives
- fillers and finishes
- assembly processes, including:
 - nailing
 - gluing
 - screwing
 - welding
 - pressing
 - sewing
 - bonding
 - jointing
 - connecting various materials
- work health and safety legislation, regulations, standards and codes of practice relevant to the full range of processes for the construction of prototypes and samples
- workplace and site standards, requirements, policies and procedures for constructing prototypes and samples
- environmental protection requirements in relation to the selection and use of materials
- established communication channels and protocols relevant to the prototyping process, including stakeholder or client communications
- relevant problem identification and resolution to meet job specifications in terms of function, aesthetics, elements and principles of design, technical integrity and ergonomics
- elements and principles of design, including:
 - line
 - shape
 - form (geometric or organic)
 - texture
 - colour
 - function
- principles of ergonomic design and aesthetic values
- types of tools and equipment and procedures for their safe use, operation and maintenance
- set-up and operation of equipment

- design and other relevant software and applications used in prototyping
- product assembly techniques
- sketching and drawing methods, including:
 - isometric
 - oblique
 - perspective
 - orthographic
 - elevation drawings that explode the parts of the concept sketches and include:
 - rough sizes
 - scale
 - tones
 - values
- storage systems and labelling
- procedures for the recording, reporting and maintenance of workplace records and information
- appropriate mathematical procedures for estimation and measurement
- work instructions, operating procedures and inspection processes to:
 - minimise the risk of injury to self or others
 - prevent damage to goods, equipment and products
 - maintain required production output and product quality.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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