



Australian Government

MSFFDM5007 Develop, trial and evaluate prototypes

Release: 1

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Modification History

Release 1. Unit code and Application changed. Elements and Performance Criteria changed. Range of Conditions removed and relevant content moved to Assessment Requirements. Assessment Requirements changed to remove duplication with Performance Criteria. Supersedes and is not equivalent to MSFFT5008 Develop, trial and evaluate prototypes.

Application

This unit covers the skills and knowledge required to develop specifications, identify and select materials and processes, perform a production trial of prototypes and complete evaluation tasks and documentation. 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.

This unit applies to individuals working alone in an industry operation of any size, or a design studio environment, where they play a lead role in the design and prototyping of products, 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

Design practice, 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. Develop prototype or sample specifications	1.1 Identify and analyse purpose and outline requirements for prototype or sample from design concepts or customer requirements 1.2 Research and identify materials suitable to match design concepts or customer requirements 1.3 Research and identify appropriate construction requirements and methods for materials to be used 1.4 Research and identify ergonomic requirements from design concepts or customer requirements and in accordance with principles of ergonomic design 1.5 Prepare and document detailed prototype or sample design

	specifications, including drawings as required, following industry best-practice methods
2. Plan for prototype construction	2.1 Verify that purpose of prototype or sample is reflected in plans and drawings 2.2 Verify materials specifications and compatibility for item from prototype or sample documentation 2.3 Verify construction requirements and methods including equipment for materials being used 2.4 Prepare work plan for item, including construction stages or steps, checkpoints for measurements and tests, assembly methods, and work health and safety considerations, in accordance with workplace procedures 2.5 Clean and clear a suitable work area for prototype or sample production 2.6 Ensure required materials and other items are available and ready for use 2.7 Ensure jigs and other construction aids are identified and where required adjusted to suit work
3. Produce the prototype	3.1 Follow work plan to construct the prototype or sample, referencing any sketches and other job specifications 3.2 Conduct checks at the identified points and in accordance with workplace procedures 3.3 Identify, document and implement any required modifications to design and plan within workplace procedures 3.4 Perform initial inspection of prototype or sample to ensure it is fit for purpose 3.5 Ensure learnings from prototype construction are referred back to development personnel
4. Finalise the work sequence	4.1 Prepare prototype or sample for finishing in accordance with design specification 4.2 Clean, maintain and store tools and equipment in accordance with manufacturer specifications 4.3 Clean and clear work area, including applying waste management strategies in accordance with workplace procedures 4.4 Complete workplace documentation, including recommendations for optimisation of prototype or sample brief or work plan
5. Trial and evaluate the prototype	5.1 Develop, specify and document trial objectives and processes in accordance with industry best-practice methods

	5.2 Ensure personnel involved in trial and evaluation are prepared for their responsibilities and functions 5.3 Prepare and certify trial equipment, tools and materials prior to use in accordance with relevant specifications and workplace procedures 5.4 Conduct prototype or sample trials and capture or record results in accordance with trial specifications 5.5 Evaluate results of trial including longevity of product and make recommendations for production in accordance with procedures
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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 calculations.
- Reading skills to interpret design concepts.
- Writing and oral communication skills to develop and document prototype processes and results and work collaboratively with other personnel.

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

Unit Mapping Information

Release 1. Supersedes and is not equivalent to MSFFT5008 Develop, trial and evaluate prototypes.

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 MSFFDM5007 Develop, trial and evaluate prototypes

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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:

- develop and evaluate two different prototypes, and in doing so:
 - identify compatibility/incompatibility of materials, adhesives, fittings and fasteners for the application
 - demonstrate how the design of the prototype or sample components will influence the working lifetime of the item.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- the function and features of a strong design brief, including:
 - the aims, objectives, milestones for the design project
 - workplace or personal profiles
 - target audience
 - budget
 - timeline
 - consultation requirements
 - colour requirements
 - image requirements
 - function
- range, 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
- state or territory WHS legislation, regulations, standards and codes of practice relevant to the full range of processes for the construction of prototypes and samples
- organisational and site standards, requirements, policies and procedures for constructing prototypes and samples
- environmental protection requirements
- established communication channels and protocols
- relevant problem identification and resolution
- elements and principles of design, including:
 - line
 - shape
 - form (geometric or organic)
 - texture
 - colour
 - function
- trends and detailed knowledge of furniture construction
- principles of ergonomics 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
- 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
- destructive and non-destructive testing techniques and processes
- 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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