



Australian Government

MEM09023 Create 3-D code files using computer-aided manufacturing system

Release: 1

MEM09023 Create 3-D code files using computer-aided manufacturing system

Modification History

Release 1. Supersedes and is equivalent to MEM09023A Create 3D code files using computer aided manufacturing system

Application

This unit of competency defines the skills and knowledge required to produce 3-D computer-aided manufacturing (CAM) code files from existing computer-aided design (CAD) models or from data collected by sample measurement. It includes managing files and tools and customising installed software.

This unit typically applies in a manufacturing setting where components are machined or processed within a CAM environment.

Where a CAD system is also used then unit MEM09009 Create 2-D drawings using computer-aided design system and unit MEM09010 Create 3-D models using computer-aided design system, should also be selected as appropriate.

Where components are machined following development of code files then appropriate computer numerically controlled (CNC) machining units should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: B

Unit Weight: 6

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM09022	Create 2-D code files using computer-aided manufacturing system
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
MEM16008	Interact with computing technology

Competency Field

Drawing, drafting and design

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Identify job requirements from specifications, job sheets or associated work instructions
2	Prepare 3-D environment	2.1	Customise system variables, user interface and software defaults to suit job requirements
		2.2	Establish coordinate system, orientation and views according to job requirements
3	Manipulate 3-D models	3.1	Import models using a variety of file formats
		3.2	Orient existing 3-D models and manipulate to job requirements
		3.3	Link model entities to database attributes to suit job requirements
		3.4	Develop manufacturing data from the 3-D CAM model
4	Produce output and manage 3-D code files	4.1	Save files in a variety of formats for retrieval according to SOPs
		4.2	Verify CAM model for logical sequencing and correct manufacturing procedures
		4.3	Produce code from the 3-D CAM model

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

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

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Customising includes the use of one (1) or more of the following:

- macros
- menus
- default settings

Entities include one (1) or more of the following:

- lines
- arcs
- primitives, including:
 - spheres
 - surfaces
 - solids
 - cones
 - cylinders
 - boxes

Unit Mapping Information

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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM09023 Create 3-D code files using computer-aided manufacturing system

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- preparing to produce 3-D computer-aided manufacture (CAM) code files by coordinating system, orientation and views to suit specifications and procedures
- importing 3-D models using various file formats and orienting and manipulating them, and linking model entities to data attributes to suit job requirements
- developing manufacturing data from 3-D CAM model to suit requirements
- producing and saving files in various formats for retrieval and verifying CAM model for logical sequencing and correct manufacturing procedures
- producing code from completed 3-D CAM model.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures
- coordinate systems
- orientation of the model with respect to the coordinate system
- procedures for customising system defaults and user interface
- entities that can be manipulated in 3-D space
- procedures for manipulating entities in 3-D space
- procedures for using the post processor
- procedures for saving and storing CAM files
- CAD file conversions
- CAM file formats.

Assessment Conditions

- Assessors must:

- have vocational competency in creating 3-D code files using computer-aided manufacturing system at least to the level being assessed with relevant industry knowledge and experience
- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

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