



Australian Government

**Assessment Requirements for MEM29003
Apply CAD and CAM technologies in an
Industry 4.0 workplace**

Release: 1

Assessment Requirements for MEM29003 Apply CAD and CAM technologies in an Industry 4.0 workplace

Modification History

Release 1. New unit.

Performance Evidence

There must be evidence the candidate has demonstrated the ability to:

- source required information for at least two CAD 3D models from technical drawings, job specifications and other computer programs
- test features and functions of a CAD system by:
 - creating, modifying and deleting attributes using drawing tools for at least two products, components or parts
 - creating specified geometrical shapes comprising points, lines and arcs
 - retrieving, saving and outputting at least two products, components or parts files in appropriate formats
- check and validate accuracy of required information for at least one technical drawing and two 3D CAD models
- test features and functions of a CAM system by:
 - linking at least two 3D models to database in accordance with job requirements
 - developing manufacturing data from at least two 3D models
 - saving and outputting 3D code files in required format from manufacturing data for at least two 3D models
- identify and map workplace data flow from CAD job requirements to subtractive or additive manufacturing equipment including flows to and from ERP and SCADA systems if present
- produce products, components, or parts using digital additive or subtractive manufacturing equipment to test CAM code files
- assess extent that current CAD operations use CAD system and software capability
- assess extent that current CAM operations use CAM system and software capability
- identify options to improve data flow and networking of CAD and CAM hardware and software.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- types and uses of drawings and models commonly used in manufacturing, including the relationship between the views contained in drawings

- terms and conventions used in technical drawings and modelling
- basic navigation procedures for CAD and CAM systems including:
 - system operations including
 - start
 - shut down
 - access and security
 - updating
 - display adjustments
 - creating and manipulating 3D models
 - modifying existing 3D models
 - saving drawing files
 - extracting data with respect to the physical properties of models created in 3D space
- formats in which CAD drawing files can be saved and reasons for using different formats when saving drawing files
- workplace drawing protocols
- principles of computer aided manufacturing (CAM) for manufacturing processes including for:
 - additive manufacturing (metallic and non-metallic)
 - subtractive manufacturing (laser cutting, plasma cutting)
- methods for importing and exporting data and files to and from CAD and CAM systems
- operating procedures for additive or subtractive manufacturing equipment sufficient to test CAM code files
- actual and potential data integration between CAD and CAM systems and other Industry 4.0 systems
- purpose of SCADA and ERP systems and methods of importing and exporting data to and from these systems
- advantages of increased networking and data including:
 - faster prototyping
 - increased speed to market
 - increased data capture.
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Assessment Conditions

- Assessors must:
 - have vocational competency in applying CAD and CAM technologies 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 that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- There must be 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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Links

Companion Volume Implementation Guides are found in VETNet -

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