



Australian Government

MEM07023 Program and set up CNC manufacturing cell

Release: 2

MEM07023 Program and set up CNC manufacturing cell

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07023 Program and set up CNC manufacturing cell (Release 1).

Release 1. Supersedes and is equivalent to MEM07023C Program and set up CNC manufacturing cell.

Application

This unit of competency defines the skills and knowledge required to program operations, set up and test the operation of a cell and extends to computer numerically controlled (CNC) machines and associated integrated equipment/robots used in flexible manufacturing cell and other advanced operations.

Where additional machining skills in excess of unit MEM07005 Perform general machining are required appropriate units should also be selected.

Where the selection and use of precision mechanical measurement is required unit MEM12003 Perform precision mechanical measurement should also be selected.

Where the selection and use of power tools/hand held operations is required unit MEM18002 Use power tools/hand held operations 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

MEM07015	Set computer controlled machines and processes
MEM07016	Set and edit computer controlled machines and processes
MEM07018	Write basic NC and CNC programs
MEM07019	Program NC and CNC machining centre
MEM07020	Program multiple spindle and multiple axis NC and CNC machining centre
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling

MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools

Plus, one or more of the following including their prerequisites:

MEM07005	Perform general machining
MEM07028	Operate computer controlled machines and processes

Competency Field

Machine and process operations

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	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Program operations	2.1	Interpret engineering drawings and manufacturing specifications to determine required equipment
		2.2	Program equipment/cell schedule
		2.3	Link controllers for integration

Elements describe the essential outcomes.

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

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|---|--------------------|-----|---|
| 3 | Set up cell | 3.1 | Configure manufacturing cell machines and equipment to meet production specifications |
| | | 3.2 | Install tooling and work holding devices and adjust to meet specifications |
| | | 3.3 | Operate cell and adjust to produce components to specification |

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, accessibility of the item, and local industry and regional contexts) are included.

- CNC manufacturing cell includes (1) one or more of the following:**
- multi-spindle machines
 - 4 and 5 axis machines
 - pallet loaded machining centres

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM07023 Program and set up CNC manufacturing cell (Release 1).

Release 1. Supersedes and is equivalent to MEM07023C Program and set up CNC manufacturing cell.

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 MEM07023 Program and set up CNC manufacturing cell

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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
- identifying and interpreting specifications, charts, lists, drawings and other applicable reference documents in programming and setting up computer numerically controlled (CNC) manufacturing cell
- loading/downloading CNC programs into individual machine controllers
- writing CNC programs
- linking machine controllers of CNC machines and transferring devices
- positioning machines and equipment to optimise manufacturing cell performance
- selecting and installing tooling and operating the cell to produce components
- checking components or products for conformance to specifications.

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 and use of personal protective equipment (PPE)
- operations to be performed in producing a given part or product
- appropriate types of CNC machines to perform required machining operations
- appropriate means of part or product transfer between machines and reasons for selecting the chosen equipment and machinery
- CNC programs for use in each of the cell components
- sequence of machining and transfer operations and the means of coordinating the operations of all components within the cell
- communication requirements between components of the cell and methods of linking machine controllers
- precautions to be taken when linking machine controllers
- optimum physical relationship between the machines and equipment within a cell

- reasons for selecting a configuration of machines and equipment and appropriate tooling for each component of the cell with reasons for tooling selection
- appropriate work holding devices for each component of the cell and reasons for selecting the chosen work holding devices
- effects of adjustments to tooling and/or work holding devices on the part or product specifications
- operating procedures for a manufacturing cell
- measurements to be taken to check a part or product for conformance to specification and the techniques/equipment to be used to measure the part or product
- effect of adjustments on cell performance
- causes of non-essential dwell times and action to be taken to minimise dwell times.

Assessment Conditions

- Assessors must:
 - have vocational competency in programming and setting up a CNC manufacturing cell 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.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including 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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