



Australian Government

Department of Education, Employment and Workplace Relations

MEM07023C Program and set up CNC manufacturing cell

Release: 1

MEM07023C Program and set up CNC manufacturing cell

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers programming operations, setting up the cell and testing the operation of the cell.
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Application of the Unit

Application of the unit	The unit extends to CNC machines and associated integrated equipment/robots used in flexible manufacturing cell and other advanced operations. This may include the use of multi-spindle machines, 4 and 5 axis machines and pallet loaded machining centres. Work is performed to predetermined standards, specifications and quality. Where machining skills in excess of Unit MEM07005C (Perform general machining) are required, then appropriate units should also be selected. Unit MEM12003B (Perform precision mechanical measurement) should also be accessed when precision measurement skills are required. Band: B Unit Weight: 6
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM07015B	Set computer controlled machines/processes
	MEM07016C	Set and edit computer controlled machines/processes
	MEM07018C	Write basic NC/CNC programs
	MEM07019C	Program NC/CNC machining centre
	MEM07020C	Program multiple spindle and/or multiple axis NC/CNC machining centre
	MEM07024B	Operate and monitor machine/process
	MEM07028B	Operate computer controlled machines/processes
	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
Path 2	MEM07005C	Perform general machining
	MEM07006C	Perform lathe operations
	MEM07007C	Perform milling operations
	MEM07015B	Set computer controlled machines/processes
	MEM07016C	Set and edit computer controlled machines/processes
	MEM07018C	Write basic NC/CNC programs
	MEM07019C	Program NC/CNC machining centre
	MEM07020C	Program multiple spindle and/or

Prerequisite units		
		multiple axis NC/CNC machining centre
	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Program operations	1.1.Engineering drawings and manufacturing specifications are interpreted and understood to determine equipment required. 1.2.Equipment/cell schedule is programmed. 1.3.Controllers are linked for integration.
2. Set up cell	2.1.Manufacturing cell machines and equipment are configured to meet production specifications. 2.2.Tooling and work holding devices are installed and adjusted to meet specifications.
3. Test cell operation	3.1.Cell is operated and adjusted to produce components to specification.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- reading and interpreting relevant drawings, specifications and instructions
- loading/downloading NC/CNC programs into the individual machine controllers
- writing NC/CNC programs
- linking machine controllers of NC/ CNC machines and transfer devices
- positioning machines and equipment to optimise manufacturing cell performance
- installing and adjusting tooling and work holding devices
- operating manufacturing cell
- checking part or product for conformance with specifications

Required knowledge

Look for evidence that confirms knowledge of:

- the operations to be performed in producing the given part or product
- the appropriate type(s) of NC/CNC machine to perform the required machining operations
- the appropriate means of part or product transfer between machines
- the reasons for selecting the chosen equipment and machinery

REQUIRED SKILLS AND KNOWLEDGE

- the NC/CNC programs for use in each of the cell components
- the sequence of machining and transfer operations
- the means of coordinating the operations of all components within the cell
- the communication requirements between components of the cell
- the methods of linking machine controllers
- the precautions to be taken when linking machine controllers
- the procedures for linking machine controllers can be given
- the specifications of the part or product to be produced
- the optimum physical relationship between the machines and equipment within the cell
- the reasons for selecting this configuration of machines and equipment
- the appropriate tooling for each component of the cell
- the reasons for tooling selection
- the appropriate work holding devices for each component of the cell
- the reasons for selecting the chosen work holding devices
- the effects of adjustments to tooling and/or work holding devices on the part or product specifications
- operating procedures for the manufacturing cell
- the measurements to be taken to check the part or product for conformance to specification
- the techniques/equipment to be used to measure the part or product
- the effect of adjustments on cell performance
- the causes of non-essential dwell times
- action to be taken to minimise dwell times
- hazards and control measures associated with CNC manufacturing cells

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

A person who demonstrates competency in this unit must be able to program and set up CNC manufacturing cell. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with programming and setting up CNC manufacturing cells, or other units requiring the exercise of the skills and knowledge covered by this unit.

Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

EVIDENCE GUIDE**Guidance information for
assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Unit Sector(s)

Unit sector	
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Co-requisite units

Co-requisite units		

Competency field

Competency field	Machine and process operations
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