



Australian Government

Department of Education, Employment and Workplace Relations

MSA40108 Certificate IV in Manufacturing Technology

Revision Number: 2

MSA40108 Certificate IV in Manufacturing Technology

Modification History

Not applicable.

Description

This qualification is suitable for delivery as part of a two year Technology Cadetship, or can be undertaken through an Australian Apprenticeship arrangement.

This qualification has five specialist streams available. These are:

- CAD/Drafting
- Manufacturing Operations
- Laboratory Operations
- Technical Officer
- Polymer Technology.

Each stream offers an opportunity for significant choice in electives and each stream requires the same core units to be completed.

Note:

- The minimum requirements for the Certificate III in Manufacturing Technology can also be met by holders of the *Certificate III in Engineering - Technician* from the Metal and Engineering Training Package.
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Pathways Information

Not applicable.

Licensing/Regulatory Information

Not applicable.

Entry Requirements

Not applicable.

Employability Skills Summary

EMPLOYABILITY SKILLS QUALIFICATION SUMMARY

Certificate IV in Manufacturing Technology

The following table contains a summary of the Employability Skills as identified by the manufacturing technology related industries for this qualification. This table should be interpreted in conjunction with the detailed requirements of each unit of competency packaged in this qualification. The outcomes described here are broad industry requirements that reflect skill requirements for this level.

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	<ul style="list-style-type: none"> • Complete workplace documentation and records • Use communication technologies efficiently • Develop work instructions, specifications and procedures • Demonstrate effective and appropriate communication and interpersonal skills when dealing with people from NESB • Communicate with all team members • Demonstrate effective and appropriate communication and interpersonal skills when dealing with clients • Use most appropriate communication method given priority, cost and customer facilities • Access, interpret and apply technical information
Teamwork	<ul style="list-style-type: none"> • Work cooperatively with people of different ages, gender, race or religion • Liaise with and provide support to other team members • Work as part of a team • Identify and manage performance required to meet internal and external customer needs in own work and team • Manage technical processes and provide problem solving support to others
Problem solving	<ul style="list-style-type: none"> • Investigate problem causes • Identify, rectify or report potential difficulties associated with manufacture of products or provision of services • Identify environmental features, regulations, insurance requirements, legal requirements and other factors which may affect the product or service to be provided • Use material and process knowledge to solve problems • Identify hazards and suggest control measures • Determine production requirements • Conduct tests and analyse results to determine and assess production requirements

Employability Skill	Industry/enterprise requirements for this qualification include:
Initiative and enterprise	<ul style="list-style-type: none"> • Seek feedback on products, processes and procedures • Gather and analyse information and apply to work related processes • Record information on the quality and other indicators of products • Support achievement of efficient production processes • Determine and act on situations requiring further information or problem solving
Planning and organizing	<ul style="list-style-type: none"> • Identify hazards and implement appropriate hazard control measures • Demonstrate time management skills • Source and prepare materials and resources • Sequence work to maximise safety and productivity
Self management	<ul style="list-style-type: none"> • Interpret and apply relevant acts and regulations • Keep the work area clean and tidy at all times • Monitor own work and work of team and identify and act on any quality issues • Understand own work activities • Manage own time to meet deadlines • Implement workplace procedures and instructions
Learning	<ul style="list-style-type: none"> • Implement learning activities as appropriate to ensure achievement of specified production requirements • Assess competencies in meeting job requirements • Be supportive, assertive and use interpersonal skills • Identify own training needs and seek skill development if required • Gather feedback to own work to assess effectiveness in meeting objectives and integrate information into own practice
Technology	<ul style="list-style-type: none"> • Use computer software applications effectively • Work with technology safely and according to workplace standards • Help others use technology efficiently and safely • Use testing technology

Packaging Rules

Packaging Rules

To be awarded a Certificate IV in Manufacturing Technology, competency must be achieved in **sixteen (16)** units of competency:

- **four (4)** core units of competency
- **twelve (12)** elective units of competency, chosen as described below.
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Core units

The following **four (4)** units must be chosen.

Unit code	Unit title
MEM16008A	Interact with computing technology
MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment
MSACMT251A	Apply quality standards
MSAENV272B	Participate in environmentally sustainable work practices

Prerequisites

Units marked with an asterisk have one or more prerequisite requirements. The prerequisites for these units are to be counted in the total number of units required in the elective group. Please refer to the individual units for details.

Elective units

Group A - specialist streams

Choose **twelve (12)** elective units as specified to achieve a specialist stream.

Note:

- All units from each specialist stream are available in Group B as General Electives.
- Three elective units may also be chosen from other qualifications in this Training Package, other endorsed Training Packages and accredited courses, as specified below.

CAD/drafting specialist stream

Select **twelve (12)** elective units:

- a minimum of **ten (10)** from the list below
- the balance may be chosen from Group B General Electives.

Unit code	Unit title	
AUM4003A	Interpret Customer Requirements	
LMTGN4002A	Participate in product engineering	
MEM12024A	Perform computations	
MEM16006A	Organise and communicate information	
MEM30001A	Use computer aided design systems to produce basic engineering drawings	*
MEM30002A	Produce basic engineering graphics	*
MEM30003A	Produce engineering drawings	*
MEM30004A	Use CAD to create and display 3D models	*
MEM30005A	Calculate force systems within simple beam structures	*
MEM30006A	Calculate stresses in simple structures	*
MEM30007A	Select common engineering materials	
MEM30008A	Apply basic economic and ergonomic concepts to evaluate engineering applications	
MEM30010A	Set up basic hydraulic circuits	
MEM30011A	Set up basic pneumatic circuits	
MEM30013A	Assist in the preparation of a basic workplace layout	
MEM30018A	Undertake basic process planning	
MEM30019A	Use resource planning software systems in manufacturing	*
MEM30020A	Develop and manage a plan for a simple manufacturing related project	
MEM30025A	Analyse a simple electrical system circuit	*
MSACMS201A	Sustain process improvements	
MSACMT230A	Apply cost factors to work practices	
UEPMNT420A	Perform electrical/electronic drafting	
	One relevant specialist elective unit may be chosen from other	

Unit code	Unit title	
	qualifications in this Training Package, other endorsed Training Packages and accredited courses.	

Manufacturing operations specialist stream

Select **twelve (12)** elective units:

- a minimum of **ten (10)** from the list below
- the balance may be chosen from Group B General Electives.

Unit code	Unit title	
FDFOP2005A	Work in a socially diverse environment	
MEM15001B	Perform basic statistical quality control	
MEM16006A	Organise and communicate information	
MEM30014A	Apply basic just in time systems to the reduction of waste	
MEM30015A	Develop recommendations for basic set up time improvements	
MEM30016A	Assist in the analysis of a supply chain	
MEM30017A	Use basic preventative maintenance techniques and tools	
MEM30018A	Undertake basic process planning	
MEM30019A	Use resource planning software systems in manufacturing	*
MEM30020A	Develop and manage a plan for a simple manufacturing related project	
MEM30021A	Prepare a simple production schedule	
MEM30023A	Prepare a simple cost estimate for a manufactured product	
MEM30024A	Participate in quality assurance techniques	*
MSACMS200A	Apply competitive manufacturing practices	
MSACMS201A	Sustain process improvements	
MSACMS401A	Ensure process improvements are sustained	
MSACMT220A	Apply quick changeover procedures	

Unit code	Unit title	
MSACMT230A	Apply cost factors to work practices	
MSACMT231A	Interpret product costs in terms of customer requirements	
MSACMT250A	Monitor process capability	
MSACMT260A	Use planning software systems in manufacturing	
MSACMT261A	Use SCADA systems in manufacturing	
MSACMT280A	Undertake root cause analysis	
MSACMT430A	Improve cost factors in work practices	
MSAENV472B	Implement and monitor environmentally sustainable work practices	
	One relevant specialist elective unit may be chosen from other qualifications in this Training Package, other endorsed Training Packages and accredited courses.	

Laboratory operations specialist stream

Select **twelve (12)** elective units:

- a minimum of **ten (10)** from the list below
- the balance may be chosen from Group B General Electives.

Unit code	Unit title	
LMTGN4016A	Contribute to the development of products or processes	
MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment	
MEM30019A	Use resource planning software systems in manufacturing	*
MEM30024A	Participate in quality assurance techniques	*
MSACMT261A	Use SCADA systems in manufacturing	
MSACMT270A	Use sustainable energy practices	
MSL913001A	Communicate with other people	
MSL922001A	Record and present data	
MSL933001A	Maintain the laboratory/field workplace fit for purpose	
MSL943001A	Work safely with instruments that emit ionising radiation	
MSL943002A	Participate in laboratory/field workplace safety	
MSL913002A	Plan and conduct laboratory/field work	
MSL933992A	Contribute to the achievement of quality objectives	
MSL933003A	Apply critical control point requirements	
MSL934001A	Contribute to the ongoing development of HACCP plans	
MSL934002A	Apply quality system and continuous improvement processes	
MSL952001A	Collect routine site samples	
MSL952002A	Handle and transport samples or equipment	
MSL953001A	Receive and prepare samples for testing	

Unit code	Unit title	
MSL954001A	Obtain representative samples in accordance with sampling plan	
MSL963001A	Operate basic handblowing equipment	
MSL963002A	Repair glass apparatus using simple glassblowing equipment	
MSL973001A	Perform basic tests	
MSL973002A	Prepare working solutions	
MSL973003A	Prepare culture media	
MSL973004A	Perform aseptic techniques	
MSL973005A	Assist with fieldwork	
MSL973006A	Prepare trial batches for evaluation	
MSL973007A	Perform microscopic examination	
MSL973012A	Assist with geotechnical site investigations	
MSL974001A	Prepare, standardise and use solutions	
MSL974002A	Conduct geotechnical site investigations	*
MSL974003A	Perform chemical tests and procedures	
	One relevant specialist elective unit may be chosen from other qualifications in this Training Package, other endorsed Training Packages and accredited courses.	

Technical officer specialist stream

Select **twelve (12)** elective units:

- a minimum of **ten (10)** from the list below
- the balance may be chosen from Group B General Electives.

Unit code	Unit title	
LMTGN4016A	Contribute to the development of products or processes	
MEM15001B	Perform basic statistical quality control	
MEM16006A	Organise and communicate information	
MEM30001A	Use computer aided design systems to produce basic engineering drawings	*
MEM30002A	Produce basic engineering graphics	*
MEM30020A	Develop and manage a plan for a simple manufacturing related project	
MEM30003A	Produce engineering drawings	*
MEM30007A	Select common engineering materials	
MEM30008A	Apply basic economic and ergonomic concepts to engineering designs and applications	
MEM30009A	Contribute to the design of basic mechanical systems	*
MEM30010A	Set up basic hydraulic circuits	
MEM30011A	Set up basic pneumatic circuits	
MEM30013A	Assist in the design of basic workplace layout	
MEM30016A	Assist in the analysis of a supply chain	
MEM30017A	Use basic preventative maintenance techniques and tools	
MEM30018A	Undertake basic process planning	

Unit code	Unit title	
MEM30019A	Use resource planning software systems in manufacturing	*
MEM30022A	Undertake supervised procurement activities	
MEM30023A	Prepare a simple cost estimate for a manufactured product	
MEM30024A	Participate in quality assurance techniques	*
MSACMT231A	Interpret product costs in terms of customer requirements	
MSACMT260A	Use planning software systems in manufacturing	
MSACMT261A	Use SCADA systems in manufacturing	
MSACMT270A	Use sustainable energy practices	
MSACMT280A	Undertake root cause analysis	
MSACMT432A	Analyse manual handling processes	
	One relevant specialist elective unit may be chosen from other qualifications in this Training Package, other endorsed Training Packages and accredited courses.	

Polymer technology specialist stream

Select **twelve (12)** elective units:

- a minimum of **six (6)** from the list below
- the balance may be chosen from Group General Electives.

Unit code	Unit title	
LMTGN4016A	Contribute to the development of products or processes	
MEM15001B	Perform basic statistical quality control	
MEM16006A	Organise and communicate information	
MEM30001A	Use computer aided design systems to produce basic engineering drawings	*
MEM30002A	Produce basic engineering graphics	*
MEM30020A	Develop and manage a plan for a simple manufacturing related project	
MEM30003A	Produce engineering drawings	*
MEM30007A	Select common engineering materials	
MEM30008A	Apply basic economic and ergonomic concepts to engineering designs and applications	
	Up to two relevant units may be chosen from the production units available at Certificate III or IV in the Plastics, Rubber & Cablemaking Training Package (PMB07), or its endorsed replacement. Note that any prerequisites are to be counted in the total number of units.	
	One relevant specialist elective units may be chosen from other qualifications in this Training Package, other endorsed Training Packages and accredited courses.	

Note that for the polymer technology specialist stream, only one of the following general elective units may be chosen, not both.

Unit code	Unit title	
PMBPREP301C	Set up and prepare for production	
PMBPREP303C	Set up equipment for continuous production	

Group B - General electives

The balance of units for each specialist stream may be chosen from this list as specified below:

CAD/drafting:	Up to two units
Manufacturing operations:	Up to two units
Laboratory operations:	Up to two units
Technical officer:	Up to two units
Polymer technology:	Up to six units

Unit code	Unit title	
AUM4003A	Interpret Customer Requirements	
FDFOP2005A	Work in a socially diverse environment	
LMTGN4002A	Participate in product engineering	
LMTGN4016A	Contribute to the development of products or processes	
MEM12024A	Perform computations	
MEM15001B	Perform basic statistical quality control	
MEM16006A	Organise and communicate information	
MEM30001A	Use computer aided design systems to produce basic engineering drawings	*
MEM30001A	Use computer aided design systems to produce	*

Unit code	Unit title	
	basic engineering drawings	
MEM30002A	Produce basic engineering graphics	*
MEM30003A	Produce engineering drawings	*
MEM30004A	Use CAD to create and display 3D models	*
MEM30005A	Calculate force systems within simple beam structures	*
MEM30006A	Calculate stresses in simple structures	*
MEM30007A	Select common engineering materials	
MEM30008A	Apply basic economic and ergonomic concepts to engineering designs and applications	
MEM30009A	Contribute to the design of basic mechanical systems	*
MEM30010A	Set up basic hydraulic circuits	
MEM30011A	Set up basic pneumatic circuits	
MEM30012A	Apply mathematical techniques in a manufacturing engineering or related environment	
MEM30013A	Assist in the preparation of a basic workplace layout	
MEM30014A	Apply basic just in time systems to the reduction of waste	
MEM30015A	Develop recommendations for basic set up time improvements	
MEM30016A	Assist in the analysis of a supply chain	
MEM30017A	Use basic preventative maintenance techniques and tools	
MEM30018A	Undertake basic process planning	
MEM30019A	Use resource planning software systems in manufacturing	*

Unit code	Unit title	
MEM30020A	Develop and manage a plan for a simple manufacturing related project	
MEM30021A	Prepare a simple production schedule	
MEM30022A	Undertake supervised procurement activities	
MEM30023A	Prepare a simple cost estimate for a manufactured product	
MEM30024A	Participate in quality assurance techniques	*
MEM30025A	Analyse a simple electrical system circuit	*
MSACMS200A	Apply competitive manufacturing practices	
MSACMS201A	Sustain process improvements	
MSACMS401A	Ensure process improvements are sustained	
MSACMT220A	Apply quick changeover procedures	
MSACMT230A	Apply cost factors to work practices	
MSACMT231A	Interpret product costs in terms of customer requirements	
MSACMT250A	Monitor process capability	
MSACMT260A	Use planning software systems in manufacturing	
MSACMT261A	Use SCADA systems in manufacturing	
MSACMT270A	Use sustainable energy practices	
MSACMT280A	Undertake root cause analysis	
MSACMT430A	Improve cost factors in work practices	
MSACMT432A	Analyse manual handling processes	
MSAENV472B	Implement and monitor environmentally sustainable work practices	
MSL913001A	Communicate with other people	
MSL913002A	Plan and conduct laboratory/field work	

Unit code	Unit title	
MSL922001A	Record and present data	
MSL933001A	Maintain the laboratory/field workplace fit for purpose	
MSL933002A	Contribute to the achievement of quality objectives	
MSL933003A	Apply critical control point requirements	
MSL934001A	Contribute to the ongoing development of HACCP plans	
MSL934002A	Apply quality system and continuous improvement processes	
MSL943001A	Work safely with instruments that emit ionising radiation	
MSL943002A	Participate in laboratory/field workplace safety	
MSL952001A	Collect routine site samples	
MSL952002A	Handle and transport samples or equipment	
MSL953001A	Receive and prepare samples for testing	
MSL954001A	Obtain representative samples in accordance with sampling plan	
MSL963001A	Operate basic handblowing equipment	
MSL963002A	Repair glass apparatus using simple glassblowing equipment	
MSL973001A	Perform basic tests	
MSL973002A	Prepare working solutions	
MSL973003A	Prepare culture media	
MSL973004A	Perform aseptic techniques	
MSL973005A	Assist with fieldwork	
MSL973006A	Prepare trial batches for evaluation	

Unit code	Unit title	
MSL973007A	Perform microscopic examination	
MSL973012A	Assist with geotechnical site investigations	
MSL974001A	Prepare, standardise and use solutions	
MSL974002A	Conduct geotechnical site investigations	*
MSL974003A	Perform chemical tests and procedures	
UEPMNT420A	Perform electrical/electronic drafting	
	A maximum of two general electives may be imported from other qualifications in this Training Package, other endorsed Training Packages and accredited courses where those units are available at Certificate III.	