



Australian Government

MEM40412 Certificate IV in Engineering Drafting

Release 3

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Modification History

Release 3 - Imported elective unit UEPMNT419A replaced by UEPMNT419B - no change in outcomes.

Release 2 - Competitive manufacturing (MSACM) units replaced by Competitive Systems and Practices units.

Release 1 - New qualification

Description

This qualification covers the skills and knowledge required for a detail draftsman producing specialist engineering drawings within an engineering or manufacturing work environment.

Application

The qualification has been developed with manufacturing and engineering-related industry sectors as a focus and may be packaged to meet the specific needs of drafting in mechanical and machine construction and maintenance, steel fabrication, other fabrication services and assembly, mechanical services, electrical services, fluid power, piping assembly, and so on. Application of this qualification involves producing detail drawings according to engineering design intent and required Australian Standards (AS). Skills required include use of computer-aided design (CAD) software functions and ability to apply industry and discipline specific knowledge to produce models, drawings and schematics for specialised engineering-related areas of industry. Skills required include knowledge of engineering principles for the specialised area as well as mathematics together with appropriate drafting skills. The qualification applies to drawings produced to specifications required by designers and to all relevant standards, including AS 1100.101–1992 Technical drawing – General principles. Skills covered may also include information gathering, such as on-site visits, calculations, consultations and research.

Pathways Information

Pathways into the qualification

This qualification may be accessed by direct entry. Credit for relevant units of competency achieved will be granted towards this qualification for those who have completed MEM30505 Certificate III in Engineering - Technical, or MSA30208 Certificate III in Manufacturing Technology, or other relevant qualifications.

Pathways from the qualification

Further training pathways from this qualification include the MSA50108 Diploma of Manufacturing Technology (Structural Steel Detailing stream) or the MEM50211 Diploma of Engineering - Technical.

Licensing/Regulatory Information

There are no specific licences that relate to this qualification.

Entry Requirements

There are no entry requirements for this qualification.

Employability Skills Summary

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	<ul style="list-style-type: none"> • Read, interpret, follow and communicate information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents • Produce sketches, diagrams, charts or graphs • Check and clarify work-related information • Provide clear and precise information to others, including team members, apprentices and production employees • Produce engineering drawings complete with all references and notations to communicate design detail • Recognise and use common engineering terminology and symbols • Liaise with appropriate authorities
Teamwork	<ul style="list-style-type: none"> • Work alone or as part of a team • Contribute to a group effort in order to plan and carry out work • Identify work roles, communicate and cooperate with others
Problem solving	<ul style="list-style-type: none"> • Undertake numerical operations, geometry and calculations/formulae, including addition, subtraction, multiplication, division, fractions and decimals, percentages and proportions, simple ratios and averages • Use engineering measuring techniques • Inspect quality of own or other employee's work • Assess operation and condition of equipment against specifications • Analyse information from drawings, design documents, manuals and reports • Develop, implement and evaluate solutions to problems • Translate designs into drawing documents
Initiative and enterprise	<ul style="list-style-type: none"> • Be capable of applying the competency in new and different situations and contexts • Identify actual and foreseeable workplace hazards during course of work • Implement OHS risk management procedures • Modify work plan to overcome unforeseen difficulties or developments that occur as work progresses • Participate in improvement procedures, including process, quality and internal/external customer/supplier relationships • Economise material and energy use and minimise waste

Planning and organising	<ul style="list-style-type: none"> • Plan, prioritise and sequence work operations to ensure completion of activities within schedules • Organise and analyse information relevant to work • Set up jobs prior to commencement of work, including selection of appropriate tools and equipment
Self-management	<ul style="list-style-type: none"> • Carry out work safely and in accordance with company policy and procedures, environmental and other legislative requirements • Monitor performance of own and other's work to ensure customer satisfaction, efficiency and sustainability • Take responsibility for own work outcomes • Apply techniques, procedures, tools and equipment for compliance with project specifications • Ensure work complies with industry standards
Learning	<ul style="list-style-type: none"> • Check and clarify task-related information with appropriate personnel, engineer or designer • Identify internal or external customer requirements with respect to the work to be performed • Assess and modify own work practices • Use equipment manuals, online help and other reference materials, such as catalogues/lists, as required • Maintain current knowledge of applicable standards, legislation, environmental and other codes of practice and product/process developments • Assist with on-the-job training and assessment
Technology	<ul style="list-style-type: none"> • Select, set up and use appropriate tools and equipment • Select and use appropriate measuring devices to ensure compliance with tolerances and other specifications • Navigate technology to access/input/store/retrieve/save and produce information/data using appropriate software applications • Apply knowledge of appropriate engineering principles, techniques, procedures, diagnostic methods, tools and equipment to achieve the required outcome • Check equipment and instruments for accuracy • Improve efficiency of equipment in order to minimise waste

Packaging Rules

To be awarded the MEM40412 Certificate IV in Engineering Drafting, competency must be achieved in **fifteen (15)** units of competency:

- **four (4)** core units of competency
- **eleven (11)** elective units of competency, chosen as described below.

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.

Core units of competency

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

Unit code	Unit title
MEM16006A	Organise and communicate information
MEM16008A	Interact with computing technology
MEM30012A	Apply mathematical techniques in a manufacturing, engineering or related environment
MSAENV272B	Participate in environmentally sustainable work practices

Elective units of competency

Select **eleven (11)** elective units:

- a minimum of **eight (8)** from Group A below
- the balance may be chosen from Group A or Group B General Electives.

A maximum of **two (2)** 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 or IV level.

Group A – Specialisation units

Unit code	Unit title	Prerequisites
MEM09002B	Interpret technical drawing	
MEM09201A	Work effectively in an engineering drafting workplace	
MEM09202A	Produce freehand sketches	
MEM09203A	Measure and sketch site information	
MEM09204A	Produce basic engineering detail drawings	*
MEM09205A	Produce electrical schematic drawings	*
MEM09206A	Produce drawings for mechanical services	*
MEM09207A	Produce drawings for reticulated services	*
MEM09208A	Detail fasteners and locking devices in mechanical drawings	*
MEM09209A	Detail bearings, seals and other componentry in mechanical drawings	*
MEM09210A	Create 3-D solid models using computer-aided design (CAD) system	*
MEM09211A	Produce drawings or models for industrial piping	*
MEM09212A	Produce detailed drawings of steel to non-steel connections	*
MEM09213A	Produce schematic drawings for hydraulic and pneumatic fluid power systems	*
MEM09216A	Interpret and produce curved 3-D shapes and patterns	
MEM09217A	Prepare plans for pipe and duct fabrication	*
MEM09218A	Participate in drafting projects for building services	*
MEM09219A	Prepare drawings for fabricated sheet metal products	*
MEM09220A	Apply surface modelling techniques to 3-D drawings	*

MEM09221A	Create 3-D model assemblies using computer-aided design (CAD) system	*
MEM12023A	Perform engineering measurements	
MEM15001B	Perform basic statistical quality control	
MEM16014A	Report technical information	*
MEM30031A	Operate computer-aided design (CAD) system to produce basic drawing elements	
MEM30032A	Produce basic engineering drawings	
MEM30033A	Use computer-aided design (CAD) to create and display 3-D models	*
CPCCOHS1001A	Work safely in the construction industry	
CPCPCM4002A	Estimate and cost work	
MSATCS301A	Interpret architectural and engineering design specifications for structural steel detailing	*
MSATCS302A	Detail bolts and welds for structural steelwork connections	*
MSATCS501A	Detail standardised structural connections	*
MSATCS502A	Detail structural steel members	*
MSATCS504A	Detail ancillary steelwork	*
UEPMNT419B	Perform civil drafting	
Group B – General electives		
Unit code	Unit title	Prerequisites
MEM05051A	Select welding processes	
MEM12024A	Perform computations	
MEM16003B	Provide advanced customer service	

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	
MEM30016A	Assist in the analysis of a supply chain	
MEM30019A	Use resource planning software systems in manufacturing	*
MEM30023A	Prepare a simple cost estimate for a manufactured product	
MEM30024A	Participate in quality assurance techniques	*
MEM30025A	Analyse a simple electrical system circuit	*
FDFOP2005A	Work in a socially diverse environment	
LMTGN4002A	Participate in product engineering	
MSS402002A	Sustain process improvements	
MSS402030A	Apply cost factors to work practices	
MSS402051A	Apply quality standards	

Custom Content Section

Not applicable.