



Australian Government

MEM50222 Diploma of Engineering - Technical

Release: 1

MEM50222 Diploma of Engineering - Technical

Modification History

Release 1. Supersedes and is equivalent to MEM50212 Diploma of Engineering - Technical.

Qualification Description

This qualification defines the skills and knowledge required of an Engineering Technician within metal, engineering, manufacturing and associated industries.

The skills associated with this qualification are intended to apply to a wide range of technical engineering discipline areas including mechanical, mechatronics, manufacturing, maintenance, and heating ventilation air-conditioning, engineering drafting and refrigeration and air conditioning in manufacturing, engineering and related industries. The qualification provides the opportunity to develop theoretical knowledge and technical skills in either a specific discipline area or across a broad field of technical work and learning.

This qualification should not be used for VET in Schools unless the students are formally engaged in a traineeship in accordance with the Australian Apprenticeships policy.

In some jurisdictions, units in this qualification may relate to licensing or regulatory requirements. Licensing and regulatory information is included in the relevant units of competency.

No licensing, legislative or certification requirements apply to this qualification at the time of publication. Local regulations should be checked.

Entry Requirements

There are no entry requirements for this qualification.

Packaging Rules

The requirement for achievement of the MEM50222 Diploma of Engineering - Technical is achievement of competence in twenty (20) units of competency made up of:

- all five (5) core units of competency listed below, and
- completion of a minimum of four (4) to a maximum of eight (8) Group A elective units
- completion of a minimum of seven (7) Group B elective units

A maximum of three (3) Group B elective units, that are relevant to work as engineering technician within metal, engineering, manufacturing and associated industries and do not duplicate skills and knowledge already available in units within this qualification, may be chosen from this Training Package, other endorsed Training Packages and accredited courses where those units are available for inclusion in Diploma qualifications.

The following additional descriptors are approved for use with this qualification:

MEM50222 Diploma of Engineering - Technical (Mechanical)
 MEM50222 Diploma of Engineering - Technical (Mechatronics)
 MEM50222 Diploma of Engineering - Technical (Manufacturing)
 MEM50222 Diploma of Engineering - Technical (Maintenance)
 MEM50222 Diploma of Engineering - Technical (Drafting)
 No other descriptor can be used.

Prerequisites

Prerequisite units count towards the total number of units. Units with prerequisite requirements are marked with an asterisk (refer to the individual units for details). All prerequisites are included in the qualification.

Core units of competency

Unit code	Unit title	Prereq
MEM16006	Organise and communicate information	*
MEM16008	Interact with computing technology	*
MEM22002	Manage self in the engineering environment	*
MEM30012	Apply mathematical techniques in a manufacturing engineering or related environment	
MSMENV272	Participate in environmentally sustainable work practices	

Elective units of competency

Group A

Unit code	Unit title	Prereq
CPCWHS1001	Prepare to work safely in the construction industry	
MEM09202	Produce freehand sketches	
MEM09203	Measure and sketch site information	
MEM09204	Produce basic engineering detail drawings	*
MEM09205	Produce electrical schematic drawings	*
MEM09206	Produce drawings for mechanical services	*
MEM09207	Produce drawings for reticulated services	*
MEM09208	Detail fasteners and locking devices in mechanical drawings	*

MEM09209	Detail bearings, seals and other componentry in mechanical drawings	*
MEM09211	Produce drawings or models for industrial piping	*
MEM09212	Produce detailed drawings of steel to non-steel connections	*
MEM09213	Produce schematic drawings for hydraulic and pneumatic fluid power systems	*
MEM09216	Interpret and produce curved 3D shapes and patterns	
MEM09217	Prepare plans for pipe and duct fabrication	*
MEM09218	Participate in drafting projects for building services	*
MEM09219	Prepare drawings for fabricated sheet metal products	*
MEM09223	Interpret design specifications for structural steel detailing	*
MEM09224	Detail bolts and welds for structural steelwork connections	*
MEM09229	Read and interpret technical engineering drawings	
MEM12024	Perform computations	*
MEM13015	Work safely and effectively in manufacturing and engineering	
MEM13018	Work safely with ionizing radiation	
MEM13019	Undertake work health and safety activities in the workplace	
MEM15001	Perform basic statistical quality control	*
MEM15004	Perform inspection	*
MEM15005	Select and control inspection processes and procedures	*
MEM16003	Provide advanced customer service	*
MEM16012	Interpret technical specifications and manuals	*
MEM16014	Report technical information	*
MEM18001	Use hand tools	*
MEM24001	Perform basic penetrant testing	*
MEM24003	Perform basic magnetic particle testing	*

MEM24005	Perform basic eddy current testing	*
MEM24007	Perform ultrasonic thickness testing	*
MEM24009	Perform basic radiographic testing	*
MEM30005	Calculate force systems within simple beam structures	*
MEM30006	Calculate stresses in simple structures	*
MEM30007	Select common engineering materials	
MEM30008	Apply basic economic and ergonomic concepts to evaluate engineering applications	
MEM30009	Contribute to the design of basic mechanical systems	*
MEM30010	Set up basic hydraulic circuits	
MEM30011	Set up basic pneumatic circuits	
MEM30013	Assist in the preparation of a basic workplace layout	
MEM30014	Apply basic just in time systems to the reduction of waste	
MEM30015	Develop recommendations for basic set up time improvements	
MEM30016	Assist in the analysis of a supply chain	
MEM30017	Use basic preventative maintenance techniques and tools	
MEM30018	Undertake basic process planning	
MEM30019	Use resource planning software systems in manufacturing	*
MEM30020	Develop and manage a plan for a simple manufacturing related project	
MEM30021	Prepare a simple production schedule	
MEM30022	Undertake supervised procurement activities	
MEM30023	Prepare a simple cost estimate for a manufactured product	
MEM30024	Participate in quality assurance techniques	*
MEM30025	Analyse a simple electrical system circuit	*
MEM30026	Select and test components for simple electronic switching and	*

	timing circuits	
MEM30027	Prepare basic programs for programmable logic controllers	
MEM30028	Assist in sales of technical products	
MEM30031	Operate computer-aided design (CAD) system to produce basic drawing elements	
MEM30032	Produce basic engineering drawings	
MEM30033	Use computer-aided design (CAD) to create and display 3D models	*
MEM48001	Test the mechanical properties of materials	
MEM48002	Monitor ferrous melting and casting processes	
MEM48003	Monitor nonferrous melting and casting processes	
MEM48004	Interpret basic binary phase diagrams	
MEM48005	Apply basic knowledge of casting operations	
MSMENV472	Implement and monitor environmentally sustainable work practices	
MSMSUP390	Use structured problem-solving tools	
MSS402062	Use SCADA systems in operations	
MSS402084	Undertake root cause analysis	
MSS402086	Use planning software systems in operations	
MSS403003	Contribute to improvements in competitive systems and practices	
MSS403012	Facilitate change in a competitive systems and practices environment	
MSS403022	Facilitate a Just in Time system	
MSS403031	Analyse and improve manual handling processes	
MSS403045	Facilitate and improve 5S	
MSS403081	Ensure process improvements are sustained	
MSS403082	Improve cost factors in work practices	

MSS404051	Mistake proof a process	
MSS404056	Apply statistics to operational processes	
MSS404062	Facilitate the use of planning software systems in a work area or team	
MSS404063	Facilitate the use of SCADA systems in a team or work area	
MSS404080	Undertake process capability improvements	
MSS404088	Undertake proactive maintenance analyses	
MSS404089	Assist in implementing a proactive maintenance strategy	
MSS405000	Develop competitive systems and practices for operational objectives	
MSS405017	Develop business plans in an organisation implementing competitive systems and practices	
MSS405025	Analyse and map a value stream	
MSS405026	Manage a value stream	
MSS405034	Develop a Just in Time system	
MSS405038	Optimise process costs	
MSS405042	Manage 5S system in an organisation	
MSS405045	Manage relationships with non-customer external organisations	
MSS405046	Manage workplace learning	
MSS405047	Undertake analysis of cost and waste in terms of customer value	
MSS405065	Develop the application of enterprise control systems in an organisation	
MSS405078	Lead and manage people within competitive systems and practices	
UEECD0007	Apply work health and safety regulations, codes and practices in the workplace	
UEECD0051	Use drawings, diagrams, schedules, standards, codes and specifications	*
UEPMNT419	Perform civil drafting	*

Group B

Unit code	Unit title	Prereq
CPPBDN6106	Produce building information modelling for building design projects	
MEM09002	Interpret technical drawing	*
MEM09011	Apply basic engineering design concepts	*
MEM09155	Prepare mechanical models for computer-aided engineering (CAE)	*
MEM09156	Prepare mechatronic models for computer-aided engineering (CAE)	*
MEM09157	Perform mechanical engineering design drafting	
MEM09158	Perform mechatronics engineering design drafting	
MEM09210	Create 3D solid models using computer-aided design (CAD) system	*
MEM09214	Perform advanced engineering detail drafting	*
MEM09215	Supervise detail drafting projects	*
MEM09220	Apply surface modelling techniques to 3D drawings	*
MEM09221	Create 3D model assemblies using computer-aided design (CAD) system	*
MEM09222	Interpret and maintain or restore original drawings	*
MEM09225	Detail standardised structural connections	*
MEM09226	Detail structural steel members	*
MEM09227	Establish structural steel detailing project arrangements	
MEM09228	Detail ancillary steelwork	*
MEM11011	Undertake manual handling	*
MEM12003	Perform precision mechanical measurement	*
MEM12005	Calibrate measuring equipment	*

MEM12023	Perform engineering measurements	*
MEM12025	Use graphical techniques and perform simple statistical computations	*
MEM13019	Undertake work health and safety activities in the workplace	
MEM13020	Supervise work health and safety in an industrial work environment	*
MEM14001	Schedule material deliveries	*
MEM14002	Undertake basic process planning	*
MEM14003	Undertake production scheduling	*
MEM14006	Plan work activities	*
MEM14085	Apply mechanical engineering analysis techniques	*
MEM14086	Apply mechatronic engineering analysis techniques	*
MEM14087	Apply manufactured product design techniques	*
MEM14088	Apply maintenance engineering techniques to equipment and component repairs and modifications	*
MEM14089	Integrate mechanical fundamentals into an engineering task	*
MEM14090	Integrate mechatronic fundamentals into an engineering task	*
MEM14091	Integrate manufacturing fundamentals into an engineering task	*
MEM14092	Integrate maintenance fundamentals into an engineering task	*
MEM15007	Conduct product and/or process capability studies	*
MEM15008	Perform advanced statistical quality control	*
MEM15010	Perform laboratory procedures	*
MEM15011	Exercise external quality assurance	*
MEM15012	Maintain/supervise the application of quality procedures	*
MEM16010	Write reports	*
MEM22012	Coordinate resources for an engineering project or operation	*

MEM22013	Coordinate engineering projects	*
MEM22014	Coordinate engineering-related manufacturing operations	*
MEM22015	Source and estimate engineering materials requirements	*
MEM22017	Coordinate continuous improvement and technical development	*
MEM22018	Coordinate sales and promotion of engineering-related products or services	*
MEM23003	Operate and program computers and/or controllers in engineering situations	*
MEM23004	Apply technical mathematics	
MEM23006	Apply fluid and thermodynamics principles in engineering	*
MEM23007	Apply calculus to engineering tasks	*
MEM23052	Apply basic electro and control scientific principles and techniques in aeronautical engineering	
MEM23063	Select and organise mechanical engineering material tests	*
MEM23064	Select and organise mechatronic engineering material tests	*
MEM23109	Apply engineering mechanics principles	*
MEM23111	Select electrical equipment and components for engineering applications	*
MEM23112	Investigate electrical and electronic controllers in engineering applications	*
MEM23139	Design a basic single zone duct distribution system	*
MEM23140	Determine operational parameters for building HVAC hydronic systems	*
MEM23142	Determine psychrometric processes and system performance	*
MEM23143	Apply energy management principles	*
MEM23145	Apply codes and regulations to air conditioning designs	*
MEM23148	Develop energy management solutions	*
MEM23151	Commission and optimise performance of HVACR systems	*

MEM23152	Apply principles of refrigeration food storage technology	
MEM23154	Analyse and service HVACR systems	*
MEM24002	Perform penetrant testing	*
MEM24004	Perform magnetic particle testing	*
MEM24006	Perform eddy current testing	*
MEM24008	Perform ultrasonic testing	*
MEM24010	Perform radiographic testing	*
MEM24011	Establish non-destructive tests	*
MEM24012	Apply metallurgical principles	*
MEM30029	Use workshop equipment and processes to complete an engineering project	*
MEM48011	Apply basic chemical principles to metallurgy	
MEM48012	Calculate and predict chemical outcomes in metallurgical situations	*
MEM48015	Select metal forming process	*
MEM48016	Select metal joining process	*
MEM48020	Recommend ferrous and nonferrous metals or alloys for an application	*
MSS405029	Develop quick changeover procedures	*
MSS405056	Use three or six sigma processes to determine and improve process capability	*
MSS405066	Establish data collection and processing protocols	
MSS405076	Facilitate the development of a new product	*
MSS405077	Develop a proactive maintenance strategy	
MSS405088	Plan, implement and monitor energy management	

Qualification Mapping Information

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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>