



Australian Government

MEM80125 Graduate Diploma of Engineering

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Modification History

Release	Comments
1	This qualification was first released in MEM Manufacturing and Engineering Release 5.0.

Qualification Description

This qualification defines the skills and knowledge required to undertake high level supervisory technician and technical officer work across a range of discipline areas including mechanical, mechatronics, manufacturing, maintenance, and heating ventilation air-conditioning and refrigeration (HVACR) in manufacturing and engineering. The qualification provides the opportunity to gain advanced theoretical knowledge and technical skills in either a specific discipline area or across a broad field of technical work and learning.

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. Local regulations should be checked.

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Entry requirements for the MEM80125 Graduate Diploma of Engineering are:

- an Advanced Diploma of Engineering or a Diploma of Engineering, or a
- relevant Certificate IV or Certificate III together with significant relevant vocational practice in an engineering related role, or a
- Bachelor Degree; or other higher education qualification, with relevant vocational practice in an engineering related role.

Packaging Rules

The requirement for achievement of the MEM80125 Graduate Diploma of Engineering is the achievement of competence in ten (10) units of competency made up of:

- all three (3) core units of competency and
- a minimum of four (4) units from Group A and
- the balance of units may be chosen from Group A or Group B to bring the total number of elective units to seven (7).

A maximum of three (3) elective units, may be chosen from any other Graduate Certificate or Graduate Diploma qualification where they are relevant to work in a high-level engineering supervisory technician and technical officer environment within metal, engineering, manufacturing and associated industries and do not duplicate skills and knowledge already available in units within this qualification.

CORE UNITS

Unit code	Unit title	Prerequisites
MEM234002	Integrate engineering technologies	
MEM234035	Maintain and apply technical and engineering skills	
MSMENV672	Develop workplace policy and procedures for environmental sustainability	

ELECTIVE UNITS

Group A

Unit code	Unit title	Prerequisites
MEM234001	Plan and manage engineering-related projects or operations	
MEM234003	Design machines and ancillary equipment	
MEM234004	Design for engineering-related noise and vibration mitigation	
MEM234005	Design hydrodynamic pumping systems	
MEM234006	Evaluate and select thermodynamic systems or subsystems	
MEM234007	Design fluid power systems	
MEM234008	Design plant using computer simulations	
MEM234009	Design computer-integrated manufacturing systems	
MEM234010	Design microcontroller applications	
MEM234011	Design programmable logic controller applications	
MEM234012	Design integrated maintenance management systems	
MEM234013	Plan and design engineering-related manufacturing processes	
MEM234014	Design a robotic system	

MEM234015	Design hydronic heat exchanger systems	
MEM234016	Design refrigeration systems	
MEM234017	Design exhaust, ventilation and dust collection systems	
MEM234018	Design heating, ventilation, air conditioning and refrigeration control systems	
MEM234019	Apply finite element analysis in engineering design	
MEM234020	Coordinate small lot manufacture using rapid manufacture processes	
MEM234021	Apply statistics to technology problems	
MEM234022	Apply advanced calculus to technology problems	
MEM234023	Apply differential equations to technology problems	
MEM234024	Apply advanced mathematics to technology problems	
MEM234025	Apply numerical methods to technology problems	
MEM234026	Develop and coordinate engineering-related contingency plans	
MEM234027	Plan and manage materials supply for an engineering project or manufacturing operation	
MEM234028	Produce and manage technical documentation	
MEM234029	Produce and manage technical publications	
MEM234030	Provide specialised technical and engineering guidance to other technical employees	
MEM234031	Manage installation, commissioning or modification of machines and equipment	
MEM234032	Manage fluid power-related technologies in an organisation	
MEM234033	Lead engineering-related quality operations in an organisation	
MEM234034	Manage heating, ventilation, air conditioning and refrigeration systems or projects	

MSL976006	Evaluate and select appropriate test methods and/or procedures	
MSS407026	Lead a process to determine and solve root cause for a complex problem	

Group B

Unit code	Unit title	Prerequisites
BSBHRM611	Contribute to organisational performance development	
BSBLDR812	Develop and cultivate collaborative partnerships and relationships	
MEM13015	Work safely and effectively in manufacturing and engineering	
MEM14088	Apply maintenance engineering techniques to equipment and component repairs and modifications	*
MEM14092	Integrate maintenance fundamentals into an engineering task	*
MEM16006	Organise and communicate information	*
MEM16008	Interact with computing technology	*
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	*
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	*

MEM23113	Evaluate hydrodynamic systems and system components	*
MEM23114	Evaluate thermodynamic systems and components	*
MEM23115	Evaluate fluid power systems	*
MEM23116	Evaluate programmable logic controller and related control system component applications	*
MEM23117	Evaluate microcontroller applications	*
MEM23118	Apply production and service control techniques	*
MEM23119	Evaluate continuous improvement processes	*
MEM23120	Select mechanical machine and equipment components	*
MEM23121	Analyse loads on frames and mechanisms	*
MEM23122	Evaluate computer integrated manufacturing systems	*
MEM23123	Evaluate manufacturing processes	
MEM23124	Measure and analyse noise and vibration	*
MEM23125	Evaluate maintenance systems	*
MEM234036	Apply configuration management procedures in engineering project management	*
MEM234037	Perform maintenance-related integrated logistic support management activities	*
MEM234038	Apply systems engineering procedures to engineering design project management	
MEM30005	Calculate force systems within simple beam structures	*
MEM30006	Calculate stresses in simple structures	*
MEM30012	Apply mathematical techniques in a manufacturing engineering or related environment	
MSS405000	Develop competitive systems and practices for operational objectives	
MSS405029	Develop quick changeover procedures	
MSS405035	Design a process layout	

MSS405039	Implement and optimise levelled pull system	
MSS405046	Manage workplace learning	
MSS405077	Develop a proactive maintenance strategy	
MSS407023	Quantitatively analyse impact of process changes	
MSS407024	Prepare for and implement change	
MSS407025	Build internal relationships to support competitive systems and practices	
MSS407029	Improve visual management in the workplace	
MSS407030	Manage benchmarking studies	
MSS407031	Review continuous improvement processes	
MSS407032	Facilitate improvements in the internal value stream	
MSS407033	Qualitatively review and improve process changes	
MSS407034	Respond to a major non-conformance	
MSS408011	Develop knowledge systems and learning processes for an organisation	
MSS408012	Develop problem solving capability of an organisation	
MSS408013	Develop best practice model for future state operations	
MSS408015	Develop the competitive systems and practices approach	
MSS408016	Develop the value stream	
MSS408017	Analyse and refine improvement systems	
MSS408018	Analyse data to determine organisational learning	

Pre-requisite Requirements

Unit of competency	Prerequisite requirement
MEM16006 Organise and communicate information	MEM13015 Work safely and effectively in manufacturing and engineering

MEM23119 Evaluate continuous improvement processes	MEM30012 Apply mathematical techniques in a manufacturing engineering or related environment MEM23118 Apply production and service control techniques
MEM23064 Select and organise mechatronic engineering material tests	MEM23004 Apply technical mathematics MEM23109 Apply engineering mechanics principles
MEM23124 Measure and analyse noise and vibration	MEM23004 Apply technical mathematics
MEM23006 Apply fluid and thermodynamics principles in engineering	MEM23004 Apply technical mathematics
MEM23121 Analyse loads on frames and mechanisms	MEM23004 Apply technical mathematics MEM23109 Apply engineering mechanics principles MEM23007 Apply calculus to engineering tasks
MEM23122 Evaluate computer integrated manufacturing systems	MEM23004 Apply technical mathematics MEM23111 Select electrical equipment and components for engineering applications MEM23112 Investigate electrical and electronic controllers in engineering applications
MEM23116 Evaluate programmable logic controller and related control system component applications	MEM23004 Apply technical mathematics MEM23111 Select electrical equipment and components for engineering applications MEM23112 Investigate electrical and electronic controllers in engineering applications
MEM23120 Select mechanical machine and equipment components	MEM23004 Apply technical mathematics MEM23109 Apply engineering mechanics principles

	MEM30006 Calculate stresses in simple structures MEM30005 Calculate force systems within simple beam structures
MEM14088 Apply maintenance engineering techniques to equipment and component repairs and modifications	MEM23004 Apply technical mathematics MEM14092 Integrate maintenance fundamentals into an engineering task
MEM234036 Apply configuration management procedures in engineering project management	MEM234028 Produce and manage technical documentation MEM234029 Produce and manage technical publications MEM23003 Operate and program computers and/or controllers in engineering situations
MEM23113 Evaluate hydrodynamic systems and system components	MEM23004 Apply technical mathematics MEM23006 Apply fluid and thermodynamics principles in engineering
MEM14092 Integrate maintenance fundamentals into an engineering task	MEM23004 Apply technical mathematics
MEM23111 Select electrical equipment and components for engineering applications	MEM23004 Apply technical mathematics
MEM23063 Select and organise mechanical engineering material tests	MEM23004 Apply technical mathematics MEM23109 Apply engineering mechanics principles
MEM23115 Evaluate fluid power systems	MEM23004 Apply technical mathematics MEM23006 Apply fluid and thermodynamics principles in engineering
MEM234037 Perform maintenance-related integrated logistic support management activities	MEM234028 Produce and manage technical documentation MEM234029 Produce and manage technical publications

	MEM23003 Operate and program computers and/or controllers in engineering situations
MEM23007 Apply calculus to engineering tasks	MEM23004 Apply technical mathematics
MEM23109 Apply engineering mechanics principles	MEM23004 Apply technical mathematics
MEM23114 Evaluate thermodynamic systems and components	MEM23004 Apply technical mathematics MEM23006 Apply fluid and thermodynamics principles in engineering
MEM23003 Operate and program computers and/or controllers in engineering situations	MEM16006 Organise and communicate information MEM16008 Interact with computing technology
MEM23125 Evaluate maintenance systems	MEM23004 Apply technical mathematics MEM14092 Integrate maintenance fundamentals into an engineering task MEM14088 Apply maintenance engineering techniques to equipment and component repairs and modifications
MEM23117 Evaluate microcontroller applications	MEM23004 Apply technical mathematics MEM23111 Select electrical equipment and components for engineering applications MEM23112 Investigate electrical and electronic controllers in engineering applications
MEM16008 Interact with computing technology	MEM16006 Organise and communicate information MEM13015 Work safely and effectively in manufacturing and engineering
MEM30006 Calculate stresses in simple structures	MEM30012 Apply mathematical techniques in a manufacturing engineering or related environment

MEM23118 Apply production and service control techniques	MEM30012 Apply mathematical techniques in a manufacturing engineering or related environment
MEM30005 Calculate force systems within simple beam structures	MEM30012 Apply mathematical techniques in a manufacturing engineering or related environment
MEM23112 Investigate electrical and electronic controllers in engineering applications	MEM23004 Apply technical mathematics MEM23111 Select electrical equipment and components for engineering applications

Qualification Mapping Information

Current Code and Title	Previous Code and Title	Comments	Equivalence
MEM80125 Graduate Diploma of Engineering	MEM80122 Graduate Diploma of Engineering	Superseded	Equivalent

Links

Companion volumes, including implementation guides, are found on the national training register - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=45a7f1d5-61a5-447a-9688-7abbd7e1a5c7>.