Australian Government

Department of Education, Employment and Workplace Relations

MEM80111 Vocational Graduate Diploma of Engineering

Release: 1

MEM80111 Vocational Graduate Diploma of Engineering

Modification History

New qualification

Description

The MEM80111 Vocational Graduate Diploma of Engineering is a qualification for people with responsibility and accountability for engineering-related design and/or development, leadership or operations across a range of industries and disciplines. The work environment may be project based or relate to an ongoing senior para-professional role as a technical specialist or technical leader.

The MEM80111 Vocational Graduate Diploma is designed to build upon existing expertise and provides high level specialist engineering design and engineering technical and project management skills.

The MEM80111 Vocational Graduate Diploma of Engineering can also provide an articulation pathway to professional qualifications.

Job roles/employment outcomes

The MEM80111 Vocational Graduate Diploma of Engineering provides the skills and knowledge for people performing the role of a Principal Technical Officer or equivalent in a range of engineering disciplines. Job roles related to this qualification may include engineering leadership roles, project planning, product development, research and development, project management, operations management, engineering related design and other engineering related technical roles requiring the exercising of engineering related skills of a complex and sophisticated nature or skills in a particular field of technical work.

The MEM80111 Vocational Graduate Diploma of Engineering qualification satisfies the requirements for employment as a Principal Technical Officer under relevant Awards and Agreements. Individuals seeking further information on the relationship of this qualification to the Principal Technical Officer classification should seek advice from their relevant industrial organisation.

Pathways Information

Pathways into the qualification

Pathways for candidates considering this qualification may include:

- a Diploma or Advanced Diploma of Engineering from the MEM05 Metal and Engineering Training Package
- significant relevant vocational training and/or work experience.

Pathways from the qualification

After achieving this qualification, candidates may undertake a Bachelor of Engineering or other suitable higher education qualifications.

Additional qualification advice

Units of competency selected from other Training Packages must be relevant to the work outcome, local industry requirements and the qualification level.

Many units of competency in this qualification assume a level of English, mathematics and science equivalent to a school sector Year 12 standard.

Note: Manufacturing Skills Australia recommends that the design of any training delivery and assessment program to support the achievement of this qualification is based on the context required by the industry and/or enterprise.

Licensing/Regulatory Information

There is no direct link between this qualification and licensing, legislative and/or regulatory requirements.

Entry Requirements

Entry requirements for the Vocational 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.
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Employability Skills Summary

Vocational Graduate Diploma of Engineering

The following table contains a summary of the Employability Skills as identified by the jewellery industry 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	• Establish parameters to the brief or contract and provide initial advice • Communicate and negotiate with project stakeholders and contributors • Communicate with support professionals and technicians • Establish visual performance indicators • Motivate personnel • Review proposal with client to improve outcomes and overcome possible problems • Negotiate adjustments to brief or contract • Obtain sign-off
Teamwork	• Coordinate the work of others, general and specialist, for projects that require complex and specialised knowledge to achieve objectives • Research and respond to organisational behaviour and management theory • Maintain a database of professional, trades and industry contacts • Establish and maintain continuous improvement teams
Problem-solving	• Generate and evaluate complex ideas through the analysis of information and concepts at an abstract level • Develop continuous improvement processes • Implement problem solving and decision making tools, including root cause analysis and solution evaluation techniques
Initiative and enterprise	• Initiate, analyse, design, plan, execute and evaluate major functions either broad and/or highly specialised within highly varied and/or highly specialised contexts • Generate a range of solutions using appropriate innovation, creativeness and conceptual skills • Establish and maintain project or operations management systems
Planning and organising	• Optimise the implementation plan and schedule • Establish the budget and control measures for project or operations management to conform to the financial business plan • Establish physical resources requirements

	• Establish human resources and skills development requirements • Establish and maintain records of operations or project for accountability against project objectives, schedule and budget • Maintain a plan and schedule of priorities for project or operations activities • Establish and maintain records of legislative compliance • Coordinate project functions, including planning, budgeting and strategy
Self-management	• Demonstrate full responsibility and accountability for personal outputs • Establish personal responsibilities for significant operations or projects • Establish, maintain and perform personal priorities • Establish and pursue a personal professional development program
Learning	• Demonstrate the self-directed development and achievement of broad and/or highly specialised areas of knowledge and skills building on prior knowledge and skills • Establish human resources and skills development requirements • Research and respond to organisational behaviour and management theory • Research industrial and related law • Research financial management techniques • Research knowledge, skills and techniques appropriate to chosen technical electives, mechanical, fluid power, hydrodynamic, thermodynamic, electrical, PLC and microcontroller techniques, computer simulation, differential equations, machine design, noise and vibration, manufacturing and maintenance management techniques
Technology	• Demonstrate an expert command of wide-ranging, highly specialised, technical, creative or conceptual skills in complex and/or highly specialised or varied contexts • Develop knowledge, skills and techniques appropriate to chosen technical electives, mechanical, fluid power, hydrodynamic, thermodynamic, electrical, PLC and microcontroller techniques, computer simulation, differential equations, machine design, noise and vibration, manufacturing and maintenance management techniques • Calibrate equipment, take measurements and analyse results • Use software for modelling, human machine interfaces, graphical user interfaces, and networks for data handling and control

Packaging Rules

The MEM80111 Vocational Graduate Diploma of Engineering requires achievement of **ten (10)** units in accordance with the following rules:

- **three (3)** core units of competency
- **seven (7)** elective units of competency.

Elective selection must include:

- a minimum of four (4) Group A elective units
- three (3) remaining elective units may be selected from any combination of:
  - Group A elective units
  - Group B elective units
  - units from any nationally endorsed Training Package and accredited course that are packaged at a Vocational Graduate Certificate or Vocational Graduate Diploma level.

NOTE: Units marked with an asterisk (*) have prerequisite unit/s which must be completed either before or concurrently with the listed unit.

Core units of competency

- Complete the following **three (3)** units of competency.

Unit code	Unit title
MEM234002A	Integrate engineering technologies
MEM234035A	Maintain and apply technical and engineering skills
MSAENV672B	Develop workplace policy and procedures for environmental sustainability

Elective units of competency

Group A

Select a minimum of **four (4)** elective units of competency from the following list.

Unit code	Unit title
MEM234001A	Plan and manage engineering-related projects or operations
MEM234003A	Design machines and ancillary equipment
MEM234004A	Design for engineering-related noise and vibration mitigation
MEM234005A	Design hydrodynamic pumping systems
MEM234006A	Evaluate and select thermodynamic systems or sub-systems
MEM234007A	Design fluid power systems
MEM234008A	Design plant using computer simulations
MEM234009A	Design computer-integrated manufacturing systems
MEM234010A	Design microcontroller applications
MEM234011A	Design programmable logic controller applications
MEM234012A	Design integrated maintenance management systems
MEM234013A	Plan and design engineering-related manufacturing processes
MEM234014A	Design a robotic system
MEM234015A	Design hydronic heat exchanger systems
MEM234016A	Design refrigeration systems
MEM234017A	Design exhaust, ventilation and dust collection systems
MEM234018A	Design heating, ventilation, air conditioning and refrigeration control systems
MEM234019A	Apply finite element analysis in engineering design
MEM234020A	Coordinate small lot manufacture using rapid manufacture processes
MEM234021A	Apply statistics to technology problems
MEM234022A	Apply advanced calculus to technology problems
MEM234023A	Apply differential equations to technology problems
MEM234024A	Apply advanced mathematics in technology problems

MEM234025A	Apply numerical methods to technology problems
MEM234026A	Develop and coordinate engineering-related contingency plans
MEM234027A	Plan and manage materials supply for an engineering project or manufacturing operation
MEM234028A	Produce and manage technical documentation
MEM234029A	Produce and manage technical publications
MEM234030A	Provide specialised technical and engineering guidance to other technical employees
MEM234031A	Manage installation, commissioning or modification of machines and equipment
MEM234032A	Manage fluid power related technologies in an enterprise
MEM234033A	Lead engineering-related quality operations in an enterprise
MEM234034A	Manage heating, ventilation, air conditioning and refrigeration systems or projects
MSACMG712A	Lead a problem solving process to determine and solve root cause
MSL976003A	Evaluate and select appropriate test methods and/or procedures

Group B

A maximum of three (3) elective units of competency may be selected from the following list, Group A units not already chosen or units from other endorsed Training Packages where the units are available in a VGC or VGD.

Unit code	Unit title
MEM23041A	Apply basic scientific principles and techniques in mechanical engineering situations
MEM23051A	Apply basic electro and control scientific principles and techniques in mechanical and manufacturing engineering situations
MEM23061A	Select and test mechanical engineering materials

MEM23062A	Select and test mechatronic engineering materials
MEM23071A	Select and apply mechanical engineering methods, processes and construction techniques
MEM23072A	Select and apply mechatronic engineering methods, processes and construction techniques
MEM23081A	Apply scientific principles and techniques in mechanical engineering situations *
MEM23082A	Apply scientific principles and techniques in mechatronic engineering situations *
MEM23083A	Apply industrial engineering principles and techniques in competitive manufacturing engineering situations *
MEM23091A	Apply mechanical system design principles and techniques in mechanical engineering situations *
MEM23092A	Apply automated systems principles and techniques in engineering situations *
MEM23093A	Apply plant and process design principles and techniques in engineering situations *
MEM23094A	Apply maintenance systems principles and techniques in engineering situations *
BSBLED705A	Plan and implement a mentoring program
BSBLED706A	Plan and implement a coaching strategy
BSBLED710A	Develop human capital
BSBREL701A	Develop and cultivate collaborative partnerships and relationships
MSACMG700A	Review continuous improvement processes
MSACMG701A	Prepare for and implement change
MSACMG702A	Review manufacturing practice tools and techniques
MSACMG703A	Analyse process changes
MSACMG704A	Facilitate improvements in the internal value chain
MSACMG705A	Undertake a qualitative review of a process change

MSACMG706A	Build relationships between teams in a manufacturing environment
MSACMG707A	Respond to a major non-conformance
MSACMG708A	Capture learning from daily activities in a manufacturing organisation
MSACMG709A	Facilitate improvements in the external value chain
MSACMG710A	Improve visual management in the workplace
MSACMG711A	Manage benchmarking studies
MSACMG800A	Analyse data for relevance to organisational learning
MSACMG801A	Develop the competitive manufacturing approach
MSACMG802A	Audit the use of competitive tools
MSACMG803A	Develop models of future state manufacturing practice
MSACMG804A	Develop the value chain
MSACMG805A	Develop the learning processes of the manufacturing organisation
MSACMG806A	Develop and refine systems for continuous improvement in manufacturing organisations
MSACMG807A	Develop problem solving capability of a manufacturing organisation
MSACMS606A	Introduce competitive manufacturing to a small or medium enterprise
MSACMT620A	Develop quick changeover procedures
MSACMT622A	Design a process layout
MSACMT623A	Develop a levelled pull system of manufacturing
MSACMT632A	Analyse cost implications of maintenance strategy

Custom Content Section

Not applicable.