Australian Government

MEM234035 Maintain and apply technical and engineering skills

Release: 1

MEM234035 Maintain and apply technical and engineering skills

Modification History

Release 1. Supersedes and is equivalent to MEM234035A Maintain and apply technical and engineering skills.

Application

This unit of competency defines the skills and knowledge required by a Principal Technical Officer, or someone in an equivalent position, to plan and manage their own technical role and individual development in their field of engineering for the benefit of themselves and their organisation. It covers the high-level technical, analytical, communication and system thinking skills to ensure effective performance in complex technical and engineering environments across all forms of manufacturing and engineering.

The unit covers the skills required for an individual to manage their engineering role and provides the core underpinning skills for an individual to appropriately apply technical skills gained from other units of competency in the MEM80122 Graduate Diploma of Engineering. This unit applies to an individual performing high level engineering-related work whether in a project management, supervisory or technical specialist role.

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

Pre-requisite Unit

Nil

Competency Field

Engineering science

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Develop, apply and maintain capacity for analysis	1.1 Demonstrate a systematic approach to investigation, analysis and solution of broadly defined engineering and related problems 1.2 Analyse causes and effects of non-conformances 1.3 Identify issues which require specialist assistance or have implications beyond personal expertise 1.4 Use modelling, prototyping, tests and/or experiments to support

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Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	problem-solving 1.5 Interpret, apply and verify compliance with relevant legislation, standards and codes of practice 1.6 Determine properties, performance, safe working limits, failure modes, and/or other inherent parameters of materials, components and systems relevant to specialist area of expertise 1.7 Apply research and communication techniques to access external reference material and assistance 1.8 Report results of analysis and propose solutions that are appropriate to the needs of the organisation 1.9 Share and encourage review of work by others in organisation
2. Communicate in a manner appropriate for content and audience	2.1 Actively communicate with others, including listening to, and critically and fairly comprehending, the viewpoints of others 2.2 Express information effectively and succinctly 2.3 Communicate formally and informally with technically competent and non-technically competent individuals and groups in a manner appropriate to their level of knowledge and competency 2.4 Present clear arguments and justification for recommendations 2.5 Use textual, diagrammatic, pictorial and graphical media appropriate to the context 2.6 Prepare relevant and comprehensive engineering-related documents and reports
3. Work within organisational quality systems and management practices	3.1 Apply principles of safety engineering 3.2 Identify the role of quality management systems and manage work accordingly 3.3 Respect and accommodate the broader context of engineering work within the organisation
4. Maintain and apply technical and engineering skills	4.1 Identify own area of expertise and responsibility in the organisation and relate to one or more engineering disciplines 4.2 Identify current state of development and recent applications in area of specialist knowledge or discipline 4.3 Determine the key scientific and engineering principles relevant to own area of specialist knowledge or discipline 4.4 Apply, adapt and manage engineering knowledge and practice in

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	different work contexts and applications 4.5 Use approaches that work from first principles 4.6 Identify and select materials, components, devices, systems, processes, resources, plant and equipment using appropriate reference materials and own knowledge to meet briefs 4.7 Follow processes to maximise use of sustainable engineering practices and the achievement of sustainable outcomes in all facets of technological project work 4.8 Monitor and suggest improvements to the technical framework of the organisation through monitoring of developments in own discipline

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.	
Stakeholders include:	• internal and external customers • own team members • other employees, including professional engineers, technicians, tradespersons and operators • support services and departments including maintenance, accounts and logistics • regulators • general community.
Non-conformances include:	• equipment breakdowns and faults • product returns and warranty claims • software errors • cost overruns • design faults

	• non-compliance to a customer brief • breaches of statutory requirements.
Documentation and reports include:	• progress reports • project plans • technical investigations and feasibility studies • proposals • manufacturer specifications and workshop manuals • operating procedures • customer instructions • design records • engineering drawings.
WHS requirements include:	• WHS acts and regulations and relevant standards • industry codes of practice • risk assessments • registration requirements • safe work practices • state and territory regulatory requirements.
Non-engineering related objectives include:	• budgets and other financial management • sales and marketing • environment • human resources (HR) • relationship with the broader community.
Sustainability includes:	• resources and energy • social and economic factors affecting design of machines and equipment • life cycle design of product (manufacture to re-manufacture or recycle) • raw material, solids and hazardous waste, and production by-products • contamination of land, air and stormwater pollutants, and discharge to sewerage • climate change.
Legislation, standards and codes of practice include:	• AS/NZS 4024.1 Safety of machinery • AS/NZS ISO 31000 Risk management – Principles and guidelines • NOHSC:1010 National standard for Plant • NOHSC:1014 National standard for the Control of Major Hazard Facilities • WHS legislation and regulations • industrial law and awards • trade practices • environmental protection • workers compensation

	• equality and antidiscrimination • contract law • Australian and international standards.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM234035A Maintain and apply technical and engineering skills.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2