



Australian Government

MEM234001 Plan and manage engineering-related projects or operations

Release: 1

MEM234001 Plan and manage engineering-related projects or operations

Modification History

Release 1. Supersedes and is equivalent to MEM234001A Plan and manage engineering-related projects or operations.

Application

This unit of competency defines the skills and knowledge required to plan, establish, maintain and manage complex engineering systems and resources associated with time-defined engineering-related projects or high-level engineering operations management in a manufacturing or engineering-related organisation. Examples of contexts where engineering-related projects or operations require high-level para-professional engineering skills include manufacturing, defence, transport and logistics, health and utilities.

The unit includes significant project or operations management responsibilities and can require personal and electronic communication, self-directed and group activities, business planning, project or operations planning and scheduling, and an understanding of the technology, skills, techniques and quality aspects required.

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
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Establish parameters for project or operations management	1.1 Establish budget and control measures for project or operations to conform to the business plan 1.2 Prepare project or operations management plan to conform to the business plan 1.3 Establish procurement requirements based on scope of project or operation

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	1.4 Establish the need and provide for appropriate technical and professional assistance 1.5 Establish physical, human resources and skills development requirements 1.6 Establish compliance and environmental requirements for project or operation, including work, health and safety (WHS) requirements, codes of practice, regulations, standards and other regulatory requirements and organisational procedures 1.7 Carry out project or operations modelling and calculations using appropriate modelling and analysis software
2. Implement project or operations management plan	2.1 Select an appropriate team and establish communication and co-operation within the team 2.2 Review and agree on plans, schedules and requirements with the team, assign responsibilities within the team, and establish other functional groups and expert support as required 2.3 Determine internal and external reporting requirements, including content, regulatory compliance, schedule and sign-off arrangements 2.4 Establish suppliers, contractors and delivery schedules 2.5 Arrange for any required recruitment and training of employees
3. Monitor and review accountability for project or operations implementation	3.1 Develop performance indicators that are realistic and within available timeframes and resources 3.2 Identify and minimise factors inhibiting performance against objectives 3.3 Monitor, assess and record relevant data that is transferable and justifiable 3.4 Prepare and incorporate strategies and programs to promote the sustainability of operations into organisational procedures
4. Manage progress of implementation	4.1 Establish mechanisms to manage constraints and contingencies, including coordination with team members, project stakeholders and contractors 4.2 Adjust short-term planning and schedules as required 4.3 Manage technical support, specialist and professional services to meet schedules, budgets and quality and performance requirements 4.4 Apply principles of continuous improvement to implementation

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	4.5 Document the project or operational outcomes against requirements in accordance with plans 4.6 Supervise the completion of project or operational phase, including required sign-off and completion of required documentation

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.

Business plans include:	• approval by the client or management of the organisation • budgets which have financial and performance targets • a project or operational schedule • stakeholder reporting, approval mechanisms and degree of autonomy for decision-making • legal requirements or other resources available or required to be established.
Appropriate technical and professional assistance includes one or more of the following:	• technical support and advice relating to elements which have intrinsic dangers including: • high pressure • energised fluid vessels • high temperatures and heat energy capacity • wiring or devices with high current or voltages above extra low voltage • professional support for technologies including: • specialist electric motor drives and controllers • specialist materials, plastics, metal alloys and nano materials • special processes, foundry, alloy welding, heat treatment, sealing and fastening

	- professional services for: - finance, accounts and tax - insurance and legal - training and human resources (HR).
WHS requirements, codes of practice, regulatory requirements and organisational procedures include:	- WHS acts, regulations and relevant standards - codes of practice from Australian and overseas engineering and technical associations and societies - risk assessments - registration requirements - safe work practices - state and territory regulatory requirements.
Appropriate modelling and analysis software includes:	- project tracking - financial modelling, analysis and tracking - process modelling and analysis - engineering simulation and modelling - manufacturing operation simulation.
Records of operations or projects include:	- tenders, contracts and schedule - personnel - resource allocations - financial management procedures - standard operating procedures (SOPs), including maintenance procedures - WHS committee minutes and actions - risk management and mitigation - documentation and records of current safe work method statements (SWMS), safety data sheets (SDS), work permits, standards and codes of practice - audits - meetings and communications - graphics and specifications.
Constraints and contingencies include one or more of the following:	- financial - organisational, procedural or cultural - physical constraints including: - limits to resources - limits to site access - logistical limitations.
Legislative requirements include:	- industrial law and awards - consumer protection law - trade practices - environmental protection - workers compensation

	• equality and anti-discrimination • contract law.
Continuous improvement includes:	• changes to plant, products, processes, systems or services, including design, development, implementation or manufacture, commissioning, operation or delivery and maintenance. • one or more of the following techniques: • balanced scorecard • current and future state mapping • measuring performance against benchmarks • process improvement, problem solving and decision making • data management, generation, recording, analysing, storing and use of software • training for improvement systems participation • technical training.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM234001A Plan and manage engineering-related projects or operations.

Links

Companion Volume Implementation Guides are available on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM234001 Plan and manage engineering-related projects or operations

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include:

- identifying, planning and establishing engineering and organisation requirements for the project or operation
- establishing resources required, including labour, materials, equipment within budgets and procedures on at least two occasions
- investigating and validating performance analysis, modelling and simulation software
- commencing project or operation management on at least two occasions including establishing support team and responsibilities
- overcoming constraints and contingencies to achieve schedules and budgets as contained in business plan
- undertaking appropriate internal and external reporting
- managing continuous improvement.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- types of situations where engineering-related projects or operations require high level para-professional engineering skills
- personal authorities and priorities for projects or operations
- appropriate technical and professional assistance
- current options and trends in performance analysis, project and financial modelling, engineering-related modelling and simulation software, including underpinning program and software validation techniques
- budget and control measurement and analysis techniques for project or operations management
- project plan and schedule from project design activities
- physical resource availability for project or operations
- human resource and skills availability for engineering-related projects

- accountability considerations including:
 - audit
 - recording and implementation requirements for projects or operations incorporating tenders
 - contracts
 - schedules
 - budgets
 - personnel and resource allocations
 - financial management procedures
 - standard operating procedures (SOPs)
 - maintenance procedures
- technical documentation management including:
 - graphics and specifications
 - records of meetings
 - communications
 - negotiations
 - decisions and agreements with stakeholders
- sources of information and resources including:
 - professional services
 - finance
 - accounts
 - taxation
 - legal
 - insurance
 - human resources (HR)
 - trade and industry contacts
- contemporary contingency and constraints management approaches
- implications for engineering projects or operations associated with typical financial planning and accounting processes that may relate to an engineering project or operation incorporating:
 - capital flow and liquidity
 - assets and liabilities
 - depreciation
 - balance sheet
 - costing
 - budgeting and cost control
 - break-even analysis
 - profit and loss
 - capital investment and return on investment
 - financial recordkeeping procedures for expenditures

- typical legal requirements for engineering-related projects or operations
- WHS requirements, codes of practice, regulations, standards and regulatory requirements for project or operations
- risk management and reduction, current safe work method statements (SWMS), safety data sheets (SDS) and work permits
- professional and ethical practice
- tendering and contracts requirements and processes including agreement on design and specification, negotiations and optimisations, and provisions for variations, delays and penalties
- work organisation and management theory
- conflict resolution, problem-solving and decision-making.

Assessment Conditions

- Assessors must:
 - have vocational competency in planning and managing engineering-related projects or operations at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015 or its replacement* and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
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