Australian Government

Department of Education, Employment and Workplace Relations

MEM22004A Manage engineering projects

Release: 1

MEM22004A Manage engineering projects

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers managing engineering projects within a program of work, ensuring that time, cost and quality are managed efficiently and that progress is communicated to achieve the project objectives.

Application of the Unit

Application of the unit	This unit applies to the use of project management techniques to establish project scope deliverable to budget and within projected time with consideration of people management, physical resources, appropriate science, technique, technology, quality, safety and risk, procurement, time&progress control, project commissioning and sign off. This unit only has application in qualifications that are not points based. **Band**: **0** **Unit Weight**: **0**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM16006A	Organise and communicate information

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Scope the project	1.1. Define project deliverables within the program budget. Allocate costs to budget areas. Ensure deliverables meet contractual obligations and client expectation. 1.2. Identify measurable outcomes to evaluate the project. Develop project control charts. 1.3. As appropriate incorporate concurrent engineering techniques, electronic data control and supervisory systems. 1.4. Identify cost review periods. 1.5. Develop project scope.
2. Manage people	2.1. Discuss project scope and project objectives with those involved in the project. 2.2. Delegate the achievement of outcomes in accordance with the business plan. 2.3. Inform project members of the relationship of the project to other program outcomes. 2.4. Manage human resources costs while ensuring that the project team has adequate skills and resources.
3. Manage the physical resources within the project	3.1. Define resource performance parameters. 3.2. Develop strategies to maintain the effective performance of the resource. 3.3. Train staff to monitor resource condition. 3.4. Diagnose problems and identify requirements for appropriate testing. 3.5. Review the implementation and outcome of the time and cost schedules within the overall program.
4. Manage quality, safety and environmental risk	4.1. Manage OHS&E issues. 4.2. Develop a risk management plan. 4.3. Modify time and cost schedules to ensure that outcomes are achieved to the standard of quality specified in the contract.
5. Manage procurement	5.1. Determine procurement requirements. Manage costs. 5.2. Monitor the contract to ensure objectives are achieved. 5.3. Review and approve matters during any defects and liability period.
6. Manage time and	6.1. Monitor project progress against project plan and

ELEMENT	PERFORMANCE CRITERIA
progress	project schedules, quality requirements and budget. 6.2. Keep accurate records on all aspects of project progress. Set up and manage protocols for project data and information access. 6.3. Communicate with stakeholders and taskforce members on project progress.
7. Finalise the project	7.1. Identify finalisation activities 7.2. Document the project outcomes against the project requirements. 7.3. Establish the acceptance requirements of the project according to organisational procedures and client needs. 7.4. Supervise the hand-over of the project.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
Look for evidence that confirms skills in: • documenting the project deliverables • use of concurrent engineering techniques, electronic data control and supervisory systems • documenting project scope • communicating project scope and objectives to project personnel • delegating roles, responsibility and levels of authority as appropriate to team members • implementing a team communication strategy • providing for training to fill skills gaps within the project team • providing resources to the project team is to achieve the project objectives • documenting resource performance parameters • implementing strategies to monitor and maintain the effective performance of the resource • training team members in resource monitoring procedures • documenting utilisation of physical resources within the project • performing work safely and in accordance with legislative and regulatory

REQUIRED SKILLS AND KNOWLEDGE
requirements • developing and implementing a risk management plan • documenting procurement requirements • achieving project objectives and milestones • accepting/rejecting requests for contract variation • processing warranty claims • monitoring and documenting project progress • documenting project outcomes • implementing project acceptance procedure • handing over to the client
Required knowledge
Look for evidence that confirms knowledge of: • the project deliverables • the project budget • measurable project outcomes • project control charts in terms of progress and cost controls • use of concurrent engineering techniques, electronic data control and supervisory systems • the procedures for documenting the scope of a project • communication strategies • the roles, responsibilities and level of authority of project personnel • the relationship of the project to other program outcomes • the implications for related activities if the project outcomes deviate from the project plan • the skills and resources required to complete the project • skills gaps • procedures for obtaining the required resources • resource performance parameters • strategies to maintain the effective performance of the resource • procedures for monitoring resource condition • the frequency of monitoring resource condition is established • the implications of inappropriate monitoring of resource condition • appropriate tests and testing procedures . • the reasons for selecting the chosen tests • test results are interpreted and their implications explained • variations from time and cost schedules • options for greater resource utilisation are examined and evaluated • OH&S issues • strategies to minimise OH&S risk

REQUIRED SKILLS AND KNOWLEDGE
• the requirements of a risk management plan • reasons for developing a risk management plan • procedures for implementing a risk management plan • the impact of variations in time and cost schedules on quality • the human and physical resources to be procured . • issues of probity associated with resource procurement • contract requirements for the achievement of project outcomes • terms and conditions • the procedures for variations to a contract • the authority responsible for authorising contract variations • the implications of proposed variations • defects and/or failures that could be the subject of warranty claims • the procedures for reviewing and approving warranty claim • the authority responsible for authorising action subsequent to warranty claims • the implications of accepting/rejecting individual warranty claims • project milestones with respect to schedule, budget and quality requirements • potential areas of conflict between stakeholders, clients and regulators • conflict resolution strategies • the procedures for recording and reporting project progress • communication strategies • project team members, clients, stakeholders and regulators with whom communication is to occur • the procedures for documenting project outcomes • the procedures for acceptance of the project • the procedures for project hand-over • the authority responsible for authorising project handover • the implications of not following established hand-over procedures

Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	A person who demonstrates competency in this unit must be able to manage engineering projects. Competency in this unit cannot be claimed until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
Context of and specific resources for assessment	This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with managing engineering projects or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

EVIDENCE GUIDE	
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Project control charts	Examples are Pert with critical path, Gantt
Project plans	May be a single document or a covering document which integrates the other aspects of project management such as human resource planning, risk management, financial management, project integration and project finalisation
Project schedules	May take the form of Gantt, Pert, critical path schedules. May be computer generated and integrated with resources control software.
Finalisation activities	Transition of responsibility/ownership of project deliverables/products, transfer of assets to the client or originating owner, warranty requirements, project evaluation, final audit/reconciliation, settling of financial liabilities, finalisation of account codes and other financial documentation, forwarding finalisation report to higher project authority

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

Competency field

Competency field	Management and organisation