Australian Government

Department of Education, Employment and Workplace Relations

MEM30008A Apply basic economic and ergonomic concepts to evaluate engineering applications

Release: 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

MEM30008A Apply basic economic and ergonomic concepts to evaluate engineering applications

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers participating in the application of the basic concepts of economic and ergonomic principles and procedures to evaluate an engineering application prior to production.

Application of the Unit

Application of the unit	The work is carried out under supervision, usually in a team environment. **Band**: **0** **Unit Weight**: **0**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

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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.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare required customer requirements from information provided	Criteria for the engineering application are obtained in accordance with standard operating procedures.
2. Verify that customer requirements have been met in the engineering application criteria	Criteria for the engineering application criteria are reviewed against customer requirement and deficiencies are noted. Knowledge of engineering parameters is applied to evaluate the engineering application criteria. Use of appropriate and relevant standards and codes is verified using standard operating procedures or reference to supervisor.
3. Verify specifications in accordance with economic principles	The relationships between quality, cost of production and function are considered and specifications are verified in accordance with policy and procedures.
4. Verify specifications in accordance with ergonomic principles	The specifications are checked and verified for health effects of human/machine interaction in accordance with given policy and procedures.
5. Seek approval of recommendations	All recommendations are referred to a supervisor for approval in accordance with policy and procedures.

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: • determining customer requirements • determining, accessing and using relevant Australian and ISO standards
Required knowledge
Look for evidence that confirms knowledge of: • engineering parameters:

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REQUIRED SKILLS AND KNOWLEDGE

- safety of personnel, consequences of failure (such as human injury)
- quality of product consideration
- material reliability and choice
- safety factors
- maintenance, source of spares/service
- energy consumption

- economic considerations:
  - costs of manufacture, effect of production quantity
  - cost of quality
  - design for manufacture
  - use of standardised components
- ergonomic considerations:
  - safety considerations
  - human capacity - reach, dexterity, strength, human comfort
  - health effects of human/machine interaction, repetitive use injuries
  - aesthetics

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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 participate in the application of basic economic, ergonomic concepts to evaluate engineering designs and applications.
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 applying basic economic, ergonomic concepts to engineering designs and applications, 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.

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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.	
Engineering application	For this unit, engineering application includes assisting in engineering processes and applications requiring ergonomic and economic knowledge and skills including design, engineering assessments, supervision of installation and commissioning etc.
Engineering parameters	Includes consideration of safety of personnel, consequences of failure (human injury etc.), economic considerations, production cost, quality of product consideration, material reliability and choice, design safety factors, maintenance, energy consumption, source of spares/service
Standards and codes	Includes access and use of Australian standards (AS): AS 3000, AS 1250, AS 4800, AS 1100, International Standards Organisation (ISO) standards
Economic principles	Includes production quantities (mass/batch), cost of manufacture, ease of manufacture, use of standardised components, human capacity (reach, dexterity, strength, repetitiveness, human comfort), aesthetics, health effects of human/machine interaction, safety
Ergonomic principles	Includes designing, installing or checking things for effective human use, and creating environments that are suitable for human living and work. It includes work methods, equipment,

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RANGE STATEMENT	
	facilities, and tools that influence the worker's motivation, fatigue, likelihood of sustaining an occupational injury or illness, and productivity

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

Competency field

Competency field	Engineering technician

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