



Australian Government

Assessment Requirements for MEM23005 Apply statistics and probability techniques to engineering tasks

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM23005A Apply statistics and probability techniques to engineering tasks.

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:

- solving engineering and manufacturing problems using statistics and probability techniques on at least two occasions
- using appropriate software to generate solutions to statistical and probability-related engineering problems
- validating results of simple examples using statistics and probability either analytically and/or graphically
- assisting decision-making processes in industry by analysing data using statistical and probability concepts and tools on at least two occasions
- reporting and communicating the results of statistical and probability-based analysis in accordance with procedures.

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:

- engineering applications related to statistics and probability
- statistical and probability techniques
- meaning and appropriate application of discrete and continuous data
- concepts of mean, median and mode and their application to engineering and manufacturing problems requiring statistics-based solutions
- standard deviation, range, interquartile range and frequency distributions
- use of appropriate software and/or scientific calculators to generate solutions to statistical and probability-related engineering problems and methods for presentation of data including:
 - frequency distribution tables
 - histograms
- concept of variance and its application to engineering and manufacturing situations
- application of statistical modelling to engineering and manufacturing situations
- translation of statistical data into engineering parameters and the applications to:

- process improvement techniques
- reliability analysis
- concepts of probability including:
 - single events
 - multiple events
 - with permutations and combinations
- probability distributions including:
 - normal
 - binomial
- sampling distributions including:
 - sample size
 - statistical significance
 - confidence intervals
- application of probability-based solutions to engineering and manufacturing problems.
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Assessment Conditions

- Assessors must:
 - have vocational competency in applying statistics and probability techniques to engineering tasks 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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Links

Companion Volume implementation guides are found in VETNet -

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