



Australian Government

MEM23005 Apply statistics and probability techniques to engineering tasks

Release: 1

MEM23005 Apply statistics and probability techniques to engineering tasks

Modification History

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

Application

This unit of competency defines the skills and knowledge required to apply statistics and probability techniques to engineering applications and includes the use and application of standard statistical and probability concepts and modelling methods to engineering and manufacturing situations.

Engineering applications related to statistics and probability skills may include those related to assisting decision-making in industry by analysis of data using statistical and probability concepts and tools, informing maintenance decisions and reliability analysis, identifying the most appropriate outcome of manufacturing trials and determining the effectiveness of process improvement techniques.

The unit applies to engineering or related activities and is suitable for people giving technical support to design, operations or maintenance activities and those pursuing technical qualifications and careers at paraprofessional or technician level.

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. Determine scope of statistics or probability techniques required for an engineering	1.1 Analyse an engineering application for required statistics or probability tasks 1.2 Develop systematic methods for layout and solution validation, including any required external sign-off of solution

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
application	1.3 Identify statistics or probability techniques and any software required for analysis and resolution of identified engineering tasks 1.4 Identify sources for any required professional and technical assistance
2. Apply statistical techniques to engineering applications	2.1 Apply standard statistics concepts and models to solve engineering problems 2.2 Check statistical model and solution is error free 2.3 Review model and solution to ensure they provide information relevant to resolution of engineering application task 2.4 Report results and document calculations, graphs and analysis
3. Apply probability techniques to engineering applications	3.1 Apply standard probability concepts and models to solve engineering problems 3.2 Check model and solution is laid out in a correct manner and is error free 3.3 Review solution to ensure it provides information relevant to resolution of engineering application task 3.4 Report results and document calculations, graphs and analysis

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.

Scope of statistical and probability techniques include:	• use of discrete or continuous data • application of measures of central tendency including: • mean
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	• median • mode • application of measures of distribution including: • standard deviation • range • interquartile range • analysis of statistical inference including: • sample size • statistical significance • application of probability concepts and tools including: • probability laws • probability distributions.
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Unit Mapping Information

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

Links

Companion Volume implementation guides are found in VETNet -

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