



Australian Government

MEM234022 Apply advanced calculus to technology problems

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM234022A Apply advanced calculus to technology problems.

Application

This unit of competency defines the skills and knowledge required to apply advanced calculus in an engineering or related application and includes differential and integral calculus. It includes both the application of theory in simple calculations either manually or through the use of relevant software packages for more complex situations.

It is suitable for paraprofessionals and technologists required to solve advanced mathematical problems in an engineering or related field, or for those pursuing technologist careers and qualifications.

Individuals completing this work either already have or are developing skills and experience in mathematics covering calculus and differentials.

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. Identify a need for the application of calculus	1.1 Identify and define a problem requiring application of calculus 1.2 Determine data currently available for analysis 1.3 Identify ways of obtaining other required data 1.4 Determine information required from outcome
2. Prepare to solve problem by calculus	2.1 Determine appropriate calculus to be applied 2.2 Identify and gain access to appropriate computational devices

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	2.3 Collect required input data 2.4 Analyse collected data for suitability and completeness 2.5 Take appropriate action to address any deficiencies found
3. Solve problem using calculus	3.1 Apply appropriate technique to collected data 3.2 Check answer to ensure it is within the expected rational results 3.3 Interpret answer to determine information required by problem definition and translate the result of the statistical analysis into a form which is useable by relevant stakeholders
4. Communicate outcomes	4.1 Communicate outcome to relevant stakeholders by appropriate means 4.2 Explain outcome to stakeholders, as appropriate 4.3 Confirm that the result of the analysis assists in the resolution of the problem

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.

Calculus refers to one or more of the following:	- the techniques listed under Knowledge Evidence - a related technique.
Computational devices include:	- calculators with calculus functions - computer software packages.
Appropriate action includes:	- taking necessary steps to obtain required data - obtaining some relevant proxy for the desired data - choosing a different calculus and computational device which will

	function with available data.
Appropriate techniques include:	• selected calculus which will yield required outcome • technique which is appropriate for the available data and which is relevant to the problem.
Appropriate communication includes one or more of the following:	• report • presentation • verbal communication • web-based • electronic or hard copy.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM234022A Apply advanced calculus to technology problems.

Links

Companion Volume Implementation Guides are available on VETNet -

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