



Australian Government

MEM30005 Calculate force systems within simple beam structures

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM30005A Calculate force systems within simple beam structures.

Application

This unit of competency defines the skills and knowledge required to understand and calculate force systems within simple beam structures. It involves solving simple engineering problems involving forces and moments and to determining nominal sizes of simple beams subject to loading.

The applies to work in all manufacturing and engineering workplace environments.

All work is carried out under supervision.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

MEM30012 Apply mathematical techniques in a manufacturing engineering or related environment

Competency Field

Engineering technician

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 the resultant and equilibrant of systems of coplanar forces	1.1 Follow standard operating procedures (SOPs) and comply with work health and safety (WHS) requirements at all times 1.2 Calculate the magnitude and direction of the resultant and equilibrant of coplanar force systems 1.3 Calculate the line of action of a resultant using the principle of moments
2. Determine reactions and moments for a	2.1 Calculate the support reactions for a simply supported horizontal beam using the equations of equilibrium and including the moment

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
simple horizontal beam subject to a combination of uniform and point loading	effect of a couple 2.2 Determine the possible types of failure that need to be considered 2.3 Draw shear force and bending moment diagrams 2.4 Determine bending stress 2.5 Complete calculations to determine the nominal size for the beam 2.6 Apply factors of safety to finalise nominal size of beam

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.

There is no Range of Conditions information for this unit of competency.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM30005A Calculate force systems within simple beam structures.

Links

Companion Volume implementation guides are found in VETNet -

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