



Australian Government

MEM09221 Create 3D model assemblies using computer-aided design (CAD) system

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM09221A Create 3-D model assemblies using computer-aided design (CAD) system.

Application

This unit of competency defines the skills and knowledge required to create 3-D model assemblies using computer-aided design (CAD) and is primarily suitable for those performing a drafting role.

It can be applied across a range of engineering disciplines including applications in CAD, computer graphics and animation, rapid prototyping, medical testing and visualisation of scientific research.

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

Pre-requisite Unit

MEM09229 Read and interpret technical engineering drawings

MEM30031 Operate computer-aided design (CAD) system to produce basic drawing elements

Competency Field

Drawing, drafting and design

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 assembly modelling requirements	1.1 Follow standard operating procedures (SOPs) and comply with work health and safety (WHS) requirements at all times 1.2 Check purpose, scope and information requirements for assembly modelling task 1.3 Interpret available information relevant to work requirements, and identify and address further information needs 1.4 Identify and prepare equipment required to complete work

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. Prepare 3D environment	2.1 Create 3D views on the screen by manipulating drawing planes and inserting 3D geometric shapes 2.2 Establish work planes and orientation according to job requirements 2.3 Determine key features of assembly modelling software package 2.4 Select methodology appropriate for assembly task 2.5 Create individual components within the assembly using adaptive technology 2.6 Access required library items to create assemblies
3. Produce output from 3D assembly model	3.1 Perform drawing for assembly modelling 3.2 Exploit features of assembly modelling software to improve productivity 3.3 Extract physical properties to job requirements, including volume, mass and centre of gravity 3.4 Edit solid models of components and assemblies 3.5 Apply visual style techniques
4. Complete CAD operations	4.1 Confirm model accurately reflects specifications, is presented according to work requirements and contains all relevant information 4.2 Save and file drawing elements in accordance with SOPs 4.3 Produce 2D drawings from the assembly models incorporating section views with all necessary annotation 4.4 Evaluate work and identify areas for improvement 4.5 Close applications, perform CAD housekeeping and maintain organisational filing system

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.

Solid modelling assembly includes one or more of the following:	• economic impact of design upon manufacturing • principles of design • engineering components and standard parts • edit solid models and assemblies • 2D manufacturing drawings and annotation • 3D printing of components and assemblies • rendering and use of colour on 3D models and assemblies • production of hard copies of drawings for solid models, assemblies and orthogonal drawings • saving files for later retrieval • parametric modelling • composite models • section models • 3D primitives • production of 3D models • 3D printing of components and assemblies.
Visual style techniques include one or more of the following:	• rendering types and preferences • render lighting techniques • views and scenes.
Appropriate personnel include one or more of the following:	• supervisor • leading hand • foreman • manager • site engineer • trainer • mentor • teacher • team member.
Resource requirements include one or more of the following:	• computer software • stationery • software reference documentation • reference texts • consumables • computer • printing equipment.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM09221A Create 3-D model assemblies using computer-aided design (CAD) system.

Links

Companion Volume implementation guides are found in VETNet -

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