



Australian Government

Assessment Requirements for MEM09155

Prepare mechanical models for computer-aided engineering (CAE)

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM09155A Prepare mechanical models for computer-aided engineering (CAE).

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:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- producing models that are consistent with design information and relevant standards and conventions on at least two occasions
- applying modelling techniques
- communicating, participating and negotiating with stakeholders, appropriate licensed technicians and professionals
- reviewing features, functions and context of engineering modelling including comparing available software
- creating and manipulating 3D entities using library files and adaptations and accessing supplier catalogues and data bases on at least two occasions
- creating dimensioned orthographic projections from models on at least two occasions
- extracting dimensional properties from models
- post-processing model for analysis or physical modelling
- commissioning, gaining approval, completing work, documenting, reporting and obtaining sign-off.

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:

- safe work practices and procedures
- advantages and disadvantages of computer-aided manufacturing (CAM) using modelling compared to traditional manufacturing methods
- modelling and related software functions and features
- sustainability implications to be taken into account when modelling
- methods used to produce models of:
 - mechanical products

- maintenance products
- manufactured engineering products
- plant
- systems
- mechanical components, assemblies and layouts suitable for modelling
- criteria for mechanical designs
- model creation techniques
- modelling processes
- mathematical model analysis options including finite analysis of heat flows and finite analysis of stresses and deflections
- physical modelling options
- traditional, current and emerging modelling methods
- stakeholders in the model creation
- job requirements that may create a need for licensed technical and professional services
- comparisons of modelling to traditional representation methods including:
 - pen and pencil graphics compared to wire frame, surface and solid models
 - computer animations compared to transparent overlay mobiles to test clearances and motions
 - solid models compared to isometric projections
 - computer library files compared to the use of reference charts and catalogue information
- where to access Australian and international standards and codes.

Assessment Conditions

- Assessors must:
 - have vocational competency in preparing mechanical models for computer-aided engineering (CAE) 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.

Links

Companion Volume implementation guides are found in VETNet -

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