



Australian Government

Assessment Requirements for MEM234003 Design machines and ancillary equipment

Release: 1

Assessment Requirements for MEM234003 Design machines and ancillary equipment

Modification History

Release 1. Supersedes and is equivalent to MEM234003A Design machines and ancillary equipment.

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:

- determining features of machines and equipment
- determining work health and safety (WHS), regulatory and risk management requirements
- interpreting parameters of the brief or contract
- researching current design trends and sustainability implications
- investigating options for machine and equipment design on at least two occasions
- innovating and creating solutions
- generating design solutions on at least two occasions
- measuring, modelling, calculating and analysing using software and validation techniques
- evaluating solutions for feasibility against design criteria
- communicating, negotiating and reviewing with stakeholders and client throughout the process to obtain agreement of proposal and sign-off on design.

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:

- contemporary engineering design methods
- design brief parameters
- research and investigation methods
- techniques for:
 - continuous improvement
 - problem-solving and decision-making
 - root cause analysis (RCA) or failure mode and effects analysis (FMEA) or design review based on failure mode (DRBFM), and Pareto analysis
- engineering design software options
- software validation processes
- documentation, drawings, specifications and instructions

- WHS and regulatory requirements, codes of practice, standards, risk minimisation and registration requirements
- machine element assembly arrangements and methods
- fastening and sealing methods
- gear design standards and techniques
- strength and stress analysis
- shaft design including:
 - forces, stresses and deflections of coil springs
 - stresses in thick-walled pressurised vessels and cylinders subject to shrink and press fitting
 - disk, hydraulic and cone clutches
 - velocity and acceleration analysis of mechanisms
 - ergonomics principles
 - materials selection
 - failure modes.
-

Assessment Conditions

- Assessors must:
 - have vocational competency in designing machines and ancillary equipment 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 available on VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>