



Australian Government

Assessment Requirements for MEM23132 Evaluate rapid manufacturing processes

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM23132A Evaluate rapid manufacturing processes.

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 technologies, parameters and context of rapid manufacturing applications
- investigating sustainability implications of rapid manufacturing processes and associated products
- reviewing technologies, including software, used in rapid manufacturing applications
- evaluating rapid manufacturing processes for efficiency and cost-benefit against alternative manufacturing techniques on at least two occasions
- selecting appropriate analysis principles and techniques and software
- identifying and assessing compliance against relevant work health and safety (WHS) and regulatory requirements, and risk management and organisational procedures
- assessing software, facilities, plant, tooling and materials for suitability to rapid manufacturing applications on at least two occasions
- applying systems thinking, continuous improvement, and constraint and contingency management to evaluation of rapid manufacturing processes
- reporting and documenting results of evaluation.

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:

- rapid manufacturing applications
- context of manufacturing processes
- range, features and applications of rapid manufacturing processes, including:
 - digitisers and reverse engineering processes
 - selective laser sintering (SLS)
 - fused deposition modelling (FDM)
 - stereolithography (SLA)
 - laminated object manufacturing (LOM)
 - electron beam melting (EBM)

- 3D printing (3DP)
- solid freeform fabrication
- sprayed metal deposition
- direct metal deposition (DMD)
- casting (patternless and rapid pattern processes)
- vacuum forming
- process competitiveness
- sources of support, including technical and professional assistance
- sustainability implications of rapid manufacturing processes
- WHS, regulatory and risk management requirements relevant to rapid manufacturing applications
- relationship between process and product in rapid manufacturing technologies including:
 - using printing or SLA processes in low strength paper or plastic applications
 - higher component strength applications in plastics or sintered metals
 - applications using tool steels, brass, stainless steel, carbon steel and aluminium alloy including metal spray deposition or lost wax for cast products
- materials for additive 'printing' processes
- materials for sprayed metal deposition
- materials for rapid casting
- thermoplastics for vacuum forming
- labour and skills requirements for rapid manufacturing processes
- systems thinking, continuous improvement, and constraint and contingency management
- computer-aided design (CAD) functions, features and techniques related to rapid manufacturing, including relevant file formats.
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Assessment Conditions

- Assessors must:
 - have vocational competency in evaluating rapid manufacturing processes 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.
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Links

Companion Volume implementation guides are found in VETNet -

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