



Australian Government

Assessment Requirements for MEM234010 Design microcontroller applications

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM234010A Design microcontroller applications.

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:

- interpreting features and functions of the application and parameters of the brief or contract
- determining sustainability, automation safety, work health and safety (WHS), regulatory and risk management requirements
- researching latest trends and techniques in application of controllers and in reverse engineering
- investigating, measuring, modelling and calculating for options
- investigating faults in existing designs and produce solutions
- generating and evaluating solutions
- designing microcontroller system solutions on at least two occasions
- considering any required continuous improvement, constraint and contingency management requirements in design options
- prototyping and systematically programming and testing actuators and interfaces, input sensor and/or transducers, communications and network connections, human machine interfaces (HMIs) and graphical user interfaces (GUIs)
- selecting actuators, interfaces, microcontroller, sensors and/or transducers, signal conditioning, HMIs, communication and network software and connections, on at least two occasions
- ensuring automation safety using appropriate licensed technical and professional assistance
- communicating, negotiating and reviewing with stakeholders and client throughout the process to obtain agreement on proposal and sign-off on design
- documenting design with drawings, specifications and instructions.

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 microcontroller application design methods
- 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 simulation and validation processes
- documentation, drawings, specifications and instructions
- WHS and regulatory requirements, codes of practice, standards, risk minimisation and registration requirements
- microcontroller software programming techniques
- control options
- device component options for different applications including microcontroller, user interfaces, HMIs and GUIs, software, data communications, telemetry, modems and networking topology
- specifications for input/output (I/O) and I/O channels.

Assessment Conditions

- Assessors must:
 - have vocational competency in designing microcontroller applications 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 available on VETNet -

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