



Australian Government

MEM234010 Design microcontroller applications

Release: 1

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Modification History

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

Application

This unit of competency defines the skills and knowledge required to design an automated device for a machine or piece of equipment using a microcontroller. The automated device can use digital or analog input/output (I/O) and can involve feedback control. The microcontroller application can be an autonomous device or it can be integrated into a local area network (LAN) or distributed control system (DCS) using wired or wireless communications. It includes consideration of sustainability implications, work health and safety (WHS) and automation safety.

The unit applies to the design of automated devices using microcontrollers, and design activities can also include reverse engineering and design rectification or modifications of an existing design. The unit is suitable for automated device or systems designers and maintenance personnel across all forms of manufacturing and engineering, and for those pursuing engineering or related qualifications and careers.

Individuals completing this work either already have or are developing skills and experience in the application of basic computing, controllers, mathematics, electrical and electronic systems, and evaluation of microprocessor systems and safety procedures. Mechanical, fluid power, thermodynamic, manufacturing methods and processes experience may also be required by particular system designs.

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

Pre-requisite Unit

Nil

Competency Field

Engineering science

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. Clarify client brief or	1.1 Establish the required features and functions of the microcontroller

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
contract requirements	application in consultation with the client 1.2 Determine technical, commercial and environmental parameters of the brief or contract 1.3 Determine stakeholders to be consulted in design process 1.4 Provide initial advice to client on the feasibility of the project
2. Prepare concept proposal	2.1 Carry out initial investigations and measurements 2.2 Carry out required modelling and calculations 2.3 Consider need for continuous improvement, constraints and contingency management, as part of concept proposal based on parameters of the brief 2.4 Generate microcontroller application design options that respond to the brief 2.5 Check feasibility and evaluate solutions against design criteria ensuring conformity to WHS, regulatory, sustainability and environmental requirements 2.6 Prepare a device design proposal that includes appropriate consideration of results of feasibility study, required modelling and calculations, and any required expert opinions 2.7 Review concept proposal with client and select preferred solution
3. Design micro-controlled device	3.1 Finalise selected device design 3.2 Provide documentation, drawings, specifications and instructions 3.3 Consult with client and stakeholders to obtain sign-off on design 3.4 Monitor installation and commissioning with stakeholders, and make any necessary modifications

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.

There is no Range of Conditions information for this unit of competency.

Unit Mapping Information

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

Links

Companion Volume Implementation Guides are available on VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>