Australian Government

MEA706 Apply basic scientific principles and techniques in avionic engineering situations

Release: 1

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Modification History

Release 1 - New unit of competency

Application

This unit of competency requires application of basic avionic scientific principles and techniques as a member of a design and development team or similar in support of the design and development of avionic applications, or as a member of a maintenance organisation engineering department.

Applications include identifying the range of basic avionic scientific principles and techniques relevant to avionic engineering, selecting avionic principles and techniques for particular applications, applying avionic principles and techniques to engineering tasks, and quoting results appropriately.

This unit is used in workplaces that operate under the airworthiness regulatory systems of the Australian Defence Force (ADF) and the Civil Aviation Safety Authority (CASA).

Pre-requisite Unit

MEM23004A Apply technical mathematics

Competency Field

Avionic engineering

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1.	Research and identify the range of basic scientific principles and techniques relevant to avionic engineering	1.1	Research appropriate sources of information
		1.2	Examine applications and report on the basic scientific principles relating to avionic engineering
		1.3	Identify basic avionic techniques and associated technologies, software and hardware required to

			implement scientific principles relating to avionic engineering situations
2.	Select basic avionic scientific principles and techniques relevant to particular avionic engineering applications	2.1	Select the relevant basic avionic scientific techniques and principles for particular avionic engineering situations
		2.2	Select the relevant basic avionic techniques and associated technologies, software and hardware for particular avionic engineering situations
3.	Apply the relevant basic avionic scientific principles and techniques	3.1	Apply the basic avionic scientific principles in a consistent and appropriate manner to obtain any required solution
		3.2	Use appropriate calculations and coherent units in the solution of engineering calculations
		3.3	Use significant figures in engineering calculations
		3.4	Apply the basic avionic techniques and associated technologies, software and hardware in a consistent and appropriate manner to obtain required solutions
4.	Quote the results of the application of the basic avionic scientific principles and basic techniques	4.1	Use an appropriate style to quote solutions for applications involving engineering calculations
		4.2	Use an appropriate style to quote solutions for applications not involving engineering calculations

Foundation Skills

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.

Sources of information include:

- Reference texts
- Manufacturer catalogues and industry magazines
- International aerospace organisation publications
- Websites

- Use of phone, email and fax information gathering

Avionic engineering refers to:

- The engineering discipline concerned with the conceptual development, research, design, manufacture, implementation, installation, commissioning and maintenance of aerospace electrical, instrument, radio and electronic systems and components and related test equipment for civil and military applications

Basic avionic scientific techniques and principles involves:

- The application of appropriate basic techniques (see below) supported by their mathematical skills and introductory knowledge of scientific principles to design, manufacturing, commissioning and maintenance-related tasks and projects relating to:
  - electrical systems and related wiring and components (power generation, distribution, control interfaces with hydraulic and pneumatic systems, and caution and warning systems)
  - mechanical and electro-mechanical flight instruments and indication systems (quantity, pressure, temperature and position) and components
  - electronic systems and components (communications, radio navigation, pulse, display, automatic flight control, flight management and engine management)
  - automatic test stations, adapters and software
- The applications may require the use of one or two basic avionic scientific principles together with a fundamental mathematical calculation leading to process, resources and system choices from a limited range of options.
- Basic techniques include:
  - basic hand and power tool operations
  - machining
  - fitting
  - welding
  - moulding
  - fabricating
  - wiring
  - programming techniques

Unit Mapping Information

Release 1 – supersedes and is equivalent to MEA272B Apply basic scientific principles and techniques in avionic engineering situations

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371