



Australian Government

MEA725 Apply advanced scientific principles and techniques in avionic engineering situations

Release: 1

MEA725 Apply advanced scientific principles and techniques in avionic engineering situations

Modification History

Release 1 - New unit of competency

Application

This unit of competency applies to selecting and applying advanced avionic scientific principles and techniques.

Computer techniques, graphical methods and mathematical calculations should complement scientific principles chosen and include unit analysis, appropriate precision and accuracy and use conservative estimations.

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

- | | |
|--------|--|
| MEA706 | Apply basic scientific principles and techniques in avionic engineering situations |
| MEA727 | Apply calculus in avionic engineering situations |

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.	Identify the range of scientific principles and techniques relevant to avionic engineering	1.1	Identify the scientific principles relating to avionic engineering
		1.2	Research and report on avionic scientific principles using appropriate sources of information
		1.3	Identify the techniques and associated technologies,

			software and hardware associated with implementing scientific principles relating to avionic engineering applications
		1.4	Research and report on avionic techniques using appropriate sources of information
2.	Select scientific principles and techniques	2.1	Select relevant scientific principles for specific avionic engineering situations
		2.2	Select relevant avionic techniques and associated technologies, software and hardware for specific avionic engineering situations
3.	Apply the relevant scientific principles and techniques	3.1	Apply applicable scientific principles in a consistent and appropriate manner to obtain any required solution
		3.2	Use appropriate calculations and correct units to establish quantities
		3.3	Use coherent units in equations in a systematic manner to ensure meaningful solutions
		3.4	Use significant figures in engineering calculations
		3.5	Obtain required solutions by applying chosen techniques and associated technologies, software and hardware in a consistent and appropriate manner
4.	Document the results of the application of the avionic scientific principles and techniques	4.1	Document solutions involving engineering calculations in an appropriate style
		4.2	Document solutions not involving engineering calculations in an appropriate style

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's catalogues and industrial magazines
- Internet search engines and websites
- Email
- The use of phone and fax
- Airworthiness and design authority regulations and associated advisory material

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

Avionic engineering applications refer to:

- The description or definition of an objective or challenge within a real or simulated engineering environment or state requiring a conceptual development, design, manufacture and/or implementation and/or installation, commissioning and maintenance response to affect a solution or improvement with regard 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

Unit Mapping Information

Release 1 – new unit based on and equivalent to MEM23085A Apply scientific principles and techniques in avionic engineering situations

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371>