



Australian Government

MEA705 Apply basic scientific principles and techniques in aeronautical engineering situations

Release: 2

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Modification History

Release 1 - New unit of competency

Application

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

Applications include identifying the range of basic aeronautical scientific principles and techniques relevant to aeronautical engineering, selecting aeronautical principles and techniques for particular applications, applying aeronautical 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

Aeronautical engineering

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes. Performance criteria describe the performance needed to demonstrate achievement of the element.

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| 1. Research and identify the range of basic scientific principles and techniques relevant to aeronautical engineering | 1.1 Research and report on the basic scientific principles relating to aeronautical engineering from appropriate sources of information and examination of applications |
| | 1.2 Identify the basic aeronautical techniques and associated technologies, software and hardware |

			required to implement scientific principles relating to aeronautical engineering situations
2.	Select basic aeronautical scientific principles and techniques relevant to particular aeronautical engineering applications	2.1	Select the relevant basic aeronautical scientific techniques and principles for particular aeronautical engineering situations
		2.2	Select the relevant basic aeronautical techniques and associated technologies, software and hardware for particular aeronautical engineering situations
3.	Apply the relevant basic aeronautical scientific principles and techniques appropriately	3.1	Apply the basic aeronautical 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 aeronautical 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 aeronautical scientific principles and basic techniques correctly	4.1	Quote the solution for applications involving engineering calculations in an appropriate style
		4.2	Quote the solution for applications 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 catalogues and industry magazines
- International aerospace organisation publications
- Websites

Aeronautical engineering refers to:

- Use of phone, email and fax information gathering
- The engineering discipline concerned with the conceptual development, research, design, manufacture, implementation, installation, commissioning and maintenance of aerospace mechanical, hydraulic, pneumatic, fuel and fire products, processes, systems or services for civil and military applications

Relevant basic aeronautical scientific techniques and principles involves:

- The application of appropriate basic techniques (see below) supported by mathematical skills and introductory knowledge of scientific principles to design, manufacturing, commissioning and maintenance related tasks and projects relating to:
 - metal and composite structure
 - aerodynamic loads
 - stability, control and performance
 - mechanical systems and related components
 - hydraulic systems and related components
 - pneumatic systems and related components
 - air cycle air conditioning and pressurisation systems and related components
 - power plant systems and components
 - the application and interfacing of electrical and electronic system control
- The applications may require the use of one or two basic aeronautical 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 MEA349B Apply basic scientific principles and techniques in aeronautical 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>