Australian Government

Assessment Requirements for MEA701 Produce aeronautical engineering related graphics

Release: 2

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Modification History

Release 2. Equivalent to MEA701 Produce aeronautical engineering related graphics with amended prerequisite codes.

Performance Evidence

Evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria under the specified conditions of assessment, and must include:

- reviewing aeronautical engineering applications for required features, functions and context of aeronautical engineering graphics
- developing orthographic, isometric and other 3-D graphical representations and techniques for structure, mechanical, hydraulic, pneumatic, power plant, electrical and electronic system representation
- representing aeronautical components and systems using sketching and computer graphics with regard to the following:
  - structure and structural components
  - mechanical systems and components
  - hydraulic systems and components
  - pneumatic systems and components
  - fuel systems and components
  - power plants
  - standard fasteners and locking systems
  - electrical
  - electronic
- representing aeronautical components and features using a comprehensive range of standard conventions and graphical techniques
- representing a range of aeronautical systems using standard graphical representations for wiring, circuit and schematic diagrams
- engaging appropriate technical and professional assistance for advice as required
- reporting results of review and the application of graphics techniques and providing documentation, images and files according to job, regulatory and enterprise procedures.
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Knowledge Evidence

Evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- uses for graphics, such as:
  - design specifications
  - aircraft maintenance procedures
  - modification orders and instructions
  - technical specifications and descriptions
  - physical arrangement of mechanical, hydraulic, pneumatic, power plant, and associated electrical and electronic systems and components
  - diagrammatic layouts of electrical and electronic circuits
  - aeronautical system schematic diagrams
- graphical representation techniques
- role of WHS and regulatory requirements, codes of practice, risk assessment and registration requirements relevant to aeronautical applications
- availability and features of standards related to aeronautical structure, power plants, systems and component, design, maintenance and modification
- typical criteria for aeronautical designs
- sketching techniques
- orthographic and 3-D representations
- hole basis, shaft basis and keyway tolerances and fits
- dimensioning conventions
- representing aeronautical components and systems using sketching and computer graphics
- standard conventions and graphical techniques as specified in standards, such as those listed in the Range of Conditions:
  - hole basis, shaft basis and keyway tolerances and fits
  - dimensioning, tolerancing for limits and fits
  - surface finish
  - weld symbols
  - webs, cross sections and cutting planes
  - chain drives, gear sets, pulley and belt drives
  - threads, fasteners and springs
  - shafts, keyways and splines
  - structural sections
  - surface finishes and welds
  - webs, cross sections, cutting planes
  - electric motors and electrically operated fluid power actuators
  - electrical, electronic, electro fluid (hydraulic and pneumatic) controls
- representations of aeronautical structure, systems and components, including:
  - structure and structural components
  - mechanical systems and components
  - hydraulic systems and components
  - pneumatic systems and components
  - fuel systems and components

  - power plants (engines and engine systems and components)
  - standard fasteners and locking systems
  - electrical
  - electronic
  - automatic flight and automatic engine control interface
- current and traditional methods of documentation generation and control:
  - computer library files compared to the use of reference charts and catalogue information
  - generation of orthogonal images from models
  - manual drawing
  - future developments in graphics and related engineering software
- worksite procedures and regulatory requirements for the processing and filing of graphics, specifications and operating and maintenance instructions/manuals, including CM and ILS requirements.
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Assessment Conditions

- This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is, the candidate is not in productive work, then a simulated working environment must be used that reflects realistic workplace situations and conditions. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- Assessment methods must be by direct observation of tasks and include questioning on underpinning knowledge to ensure its correct interpretation and application.
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.
- Assessors must be satisfied that the candidate can competently and consistently:
  - review features, functions and context of aeronautical engineering graphics
  - develop orthographic, isometric and other 3-D graphical representations and techniques for mechanical, fluid, electrical and electronic system representation
  - represent aeronautical components and assemblies using sketching and computer graphics
  - represent aeronautical components and features using a comprehensive range of standard conventions and graphical techniques
  - represent a range of aeronautical systems using standard graphical representations for wiring diagrams and system schematic diagrams
  - engage appropriate technical and professional assistance for advice as required

  - report results of review and the application of graphics techniques and provide documentation, images and files
  - maintain accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge.
- Assessment may be in conjunction with assessment of other units of competency where required.
- Assessors must satisfy the requirements of the National Vocational Education and Training Regulator (Australian Skills Quality Authority, or its successors).

Links

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