



Australian Government

Assessment Requirements for MEA713 Integrate aeronautical fundamentals into an engineering task

Release: 1

Assessment Requirements for MEA713 Integrate aeronautical fundamentals into an engineering task

Modification History

Release 1 - New unit of competency

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:

- communicating, cooperating and negotiating with stakeholders to achieve integration task
- determining task parameters and context, chain of responsibility, WHS, regulatory requirements, risk management and organisational procedures
- confirming personal, team and support personnel tasks and responsibilities
- evaluating task requirements, principles, techniques, components and systems, including software requirements, and software for basic analysis and graphics
- planning the task
- integrating aeronautical fundamentals to achieve task objectives
- solving problems and making decisions using systems thinking and continuous improvement to address contingencies and constraints and application of CM and/or ILS procedures
- report and documenting results of investigation, evaluation and integration, diagrams and calculations.

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:

- WHS and organisational safe working procedures
- task parameters and broader context
- personal function and responsibilities
- chain of responsibility for the activity
- team interdependencies
- aeronautical fundamentals, including:
 - mathematics
 - materials properties (ferrous metals, non-ferrous metals and fibre composites)
 - mechanics
 - chemistry
 - light, sound and electromagnetic effects, including avoidance of electro-magnetic interference

- thermodynamics and heating, aircraft air conditioning and cabin pressurisation
- gas turbine and piston engines
- aviation fuels and fuel additives
- fluid mechanics
- fluid power
- hydraulic fluid characteristics
- electrical and electronic control interfaces
- fundamentals of system layout and function
- computing
- graphics, including computer-aided design and drafting (CAD) systems
- typical workshop processes
- methods and processes, including:
 - assembly of metal structure using bolts, screws, rivets and adhesives
 - assembly of composite structure using bolts, screws, rivets and adhesive bonding
 - repair techniques for metal and composite structure
 - fabrication of ducting and plumbing for hydraulic, fuel and pneumatic systems
 - fabrication of cables for mechanical linkages and systems
 - simple programming
 - simple interfacing and signal conditioning in relation to systems, such as flight controls and pressurisation/air conditioning
 - machining, such as turning, milling, broaching, boring, shaping, planning, drilling, reaming, sawing, grinding and threading
 - hot and cold working processes
 - press operations, such as drawing, punching, cropping and forging
 - fabrication and welding of metals and plastics
 - fabrication of composite structure components
 - powder metallurgy
 - heat treatment
 - moulding, casting and forging
 - assembly, sealing, fastening and gluing
 - jigs and fixtures
 - surface plating and coating
 - computer-aided engineering (CAE) processes, such as CAD/computer-aided manufacturing (CAM)/computer-numerically controlled (CNC)/rapid processes
- functions and features of aeronautical components and systems, such as:
 - mechanical systems, such as flight controls and system components
 - hydraulic power generation and systems, such as landing gear retraction, brakes, flaps/spoilers and powered flight controls and system components
 - pneumatic systems, such as bleed air, pressurisation, air cycle air conditioning, anti-ice, brakes, flaps and landing gear retraction and system components
 - fuel storage and distribution systems and components

- power plants, including engines, engine systems, propellers, control systems and system components
- electrical systems and related wiring and components (power generation, distribution, circuit protection, control interfaces with hydraulic and pneumatic systems, and flap and landing gear retraction systems/components)
- electronic system interface relating to automatic flight control, full authority digital engine control, air conditioning and cabin pressurisation control systems
- system test stands and equipment, adapters and software
- integration of aeronautical fundamentals required for task
- communication requirements of task
- current options and trends in software, including system layout and simulation
- integration management methods.

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:
 - communicate, cooperate and negotiate with stakeholders to achieve integration task
 - determine task parameters and context, chain of responsibility, WHS, regulatory requirements, risk management and organisational procedures
 - confirm personal, team and support personnel tasks and responsibilities
 - evaluate task requirements, principles, techniques, typical applications and software
 - plan the task
 - integrate avionic fundamentals to achieve task objectives
 - solve problems and make decisions using systems thinking and continuous improvement to address contingencies and constraints
 - report and document results.
- 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>