



Australian Government

Assessment Requirements for MEA709 Apply aeronautical structure design techniques

Release: 1

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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, negotiating and reviewing context and parameters of the engineering design brief with stakeholders
- determining or confirming scientific principles and design techniques, WHS and regulatory requirements, and design specification requirements
- evaluating multiple solutions against design criteria, risk, sustainability and cost
- investigating life-cycle design and sustainability, technical and professional assistance required
- investigating and applying CM and ILS requirements
- planning, scheduling and coordinating the design task
- applying design process and scientific principles to structure and structural component design proposals, including modifications and repairs to existing structure
- solving problems and making decisions with systems thinking for contingencies and constraints, including airworthiness regulatory requirements and continuous improvement (may be requirements of CM and ILS)
- defining designs, specifying, documenting and applying graphical techniques, modelling, mock-up or prototyping techniques
- creating and maintaining adequate and accurate calculations and design process records
- reporting and documenting results of investigations, application of principles and techniques, calculations, specifications, diagrams, computer-aided design (CAD) files, mock-ups or prototypes of designs
- complying with regulatory procedures for design, modification and repair approval.

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:

- life-cycle design and sustainability implications of aircraft structure designs (may be part of CM and ILS procedures)
- design processes and techniques to investigate, synthesise and develop proposals, evaluate feasibility against design criteria, review and revise in consultation with stakeholders, model, mock-up and prototype

- systems thinking, problem solving and decision making, and continuous improvement methods
- application of CM and ILS procedures
- WHS and regulatory requirements, codes of practice, standards, risk management and registration requirements
- The roles and relevance to the design process of professional and technical assistance for engineering specialisations
- procedures for planning, scheduling and coordination of design
- hardware requirements of typical aircraft structure and structural components
- engineering scientific principles required for design analysis
- design calculations techniques
- application of software for product planning and design, such as CAD, stress analysis and mould design and project management
- required documentation, including:
 - design brief and records of negotiation
 - planning and schedule
 - calculations and diagrams documentation for checking and design records
 - specifications and graphics required to define designs
 - risk analysis report
 - design process summary report
 - life cycle and sustainability reports
 - CM and ILS documentation
 - documentation required by Regulators for approval of designs, modifications and repairs
- prototyping options, including mock-ups, physical and virtual modelling, and rapid prototyping.

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 where the range of conditions reflects realistic workplace situations.
- 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, negotiate and review design brief with stakeholders
 - determine or confirm scientific principles and design techniques, WHS and regulatory requirements, and design specification requirements
 - evaluate multiple solutions
 - apply CM and ILS requirements
 - investigate life-cycle design and sustainability, technical and professional assistance required
 - plan, schedule and coordinate the design task
 - select design components using design process and scientific principles
 - solve problems and make decisions with systems thinking for contingencies and constraints and continuous improvement
 - define designs, specify and document and apply graphical techniques, modelling, mock-up or prototyping techniques
 - create and maintain adequate and accurate calculations and design process records
 - report and document, results and processes
 - follow regulatory requirements and procedures for design, modification or repair procedures.
- 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>