



Australian Government

Assessment Requirements for PMC556031 Design structural/mechanical components

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to PMC556031C Design structural/mechanical components.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and demonstrate the ability to:

- read and interpret test results, technical information, mechanical information/specifications, equipment specifications and instruments/control panels
- determine mechanical and structural specifications, physical properties of component, and regulatory requirements
- develop mechanical design brief
- select and trial materials and determine final materials specifications
- develop component design and confirm it meets structural, mechanical, physical specifications and interface requirements
- supervise trialling and interpret results
- finalise and document design specifications and manufacturing processes
- communicate technical information verbally and in writing
- communicate with internal and external stakeholders about technical issues and bring agreement as to requirements from the different parties
- calculate and interpret cost estimates, test results, trialling data, product formulae and process conditions.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job sufficient to fulfil their job role, including knowledge of:

- impact of different materials, their additives and the rheological, heat and other effects of processing on design of a new mechanical or structural component
- factors affecting structural and mechanical properties of new component
- significance to the design of factors, including:
 - stress/strain data of materials
 - material flow properties
 - impact and notch strength
 - tensile, compressive, shear and torsional strength
- options for compounding changes to modify properties, including:
 - stress/strain data of materials
 - flow, rheometric properties
 - material strength
 - environmental resistance (e.g. temperature, chemicals, ultra-violet (UV) and other radiation)
- options for changes to component shape and size to modify properties, including:
 - stiffness/rigidity, deflection
 - strength
- component trialling and testing procedures
- principles of operation of all relevant equipment and processes
- differentiating features of main processes, materials and materials of construction of structural/mechanical components
- organisation procedures relevant to the work environment/job role
- hierarchy of control
- hazards that may arise in the job/work environment and:
 - their possible causes
 - potential consequences
- appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence shall be based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
 - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
 - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or where personal safety or environmental damage are limiting factors assessment must occur using a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Assessment in a simulated environment should use evidence collected from demonstration of skills and one or more of:
 - walk-throughs
 - pilot plant operation
 - industry-based case studies/scenarios
 - 'what ifs'.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
- The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition the assessor or anyone acting in subject matter expert role in assessment shall demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they shall assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
 - relevant VET or other qualification/Statement of Attainment
 - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
 - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions

- Currency can be demonstrated through one or more of:
 - being currently employed undertaking the type of work being assessed
 - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
 - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment
 - conducting on the job training/assessments of the type of work being assessed
 - being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

MSA Training Package Implementation Guides - <http://mskills.org.au/training-packages/info/>