



Australian Government

MEMPE006 Undertake a basic engineering project

Release: 1

MEMPE006 Undertake a basic engineering project

Modification History

Release 1. Supersedes and is equivalent to MEMPE006A Undertake a basic engineering project.

Application

This unit of competency defines the skills and knowledge to plan and undertake a basic engineering project which can be completed in an institutional environment. Included in this unit is the opportunity to use a basic computer-aided drafting (CAD) system to produce engineering type drawings. The drawings produced have to be fit for purpose but do not necessarily need to conform to drawing standard, including AS 1100.101-1992 Technical drawing - General principles.

This unit describes entry-level skills and knowledge in preparation for employment within the metal, engineering, manufacturing and associated industries and is suitable for use in institutional-based vocational programs. Skills development takes place under direct supervision.

It is not to be used in a traineeship or apprenticeship training program or associated qualifications. It is only to be used in pre-employment programs and carries no credit towards apprenticeship/trade and other qualification types in manufacturing and engineering.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Pre-employment

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Research engineering materials and components	1.1 Determine the uses of engineering materials and their comparative advantages 1.2 Determine commonly available shapes of metal materials 1.3 Determine methods used to join metal pieces and their comparative

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<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	advantages 1.4 Determine the types of plain and anti-friction bearings and their comparative advantages. including type of materials, used in machines
2. Develop a metals-based project	2.1 Research and decide on a realistic project that can be completed in the available time 2.2 Determine the types and quantities of material and components required for the project based on project scope 2.3 Gain approval for the project in accordance with procedures
3. Determine drawing requirements	3.1 Research engineering drawing practices and their application 3.2 Decide how drawings will be produced based on project scope and available equipment 3.3 Decide on appropriate dimensioning methods for the drawings produced 3.4 Decide on methods and conventions for naming and saving new or modified drawings
4. Create project documentation	4.1 Produce drawings of the completed project using manual or digital techniques 4.2 Produce accurate drawings of the individual project components 4.3 Review drawings, seek feedback from relevant people and make required modifications 4.4 Produce a complete and accurate items and materials list using digital technology
5. Plan the manufacture of the product	5.1 Determine the machines, tools and equipment required 5.2 Determine the sequence of individual component manufacture and measures needed to protect manufactured components from damage 5.3 Develop a plan for the assembly of the project 5.4 Get advice and approval for the plan from relevant people
6. Manufacture the product	6.1 Use and wear appropriate personal protective equipment (PPE) in accordance with procedures 6.2 Follow safe working practices and procedures 6.3 Manufacture and store components and acquire stock components according to the developed plan

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	6.4 Assemble product according to the developed and approved plan 6.5 Check for conformance to requirements throughout the manufacture and assembly process 6.6 Submit the project for final endorsement
7. Complete work requirements	7.1 Clear work area of waste and clean according to requirements 7.2 Maintain and/or store machines, tools and equipment according to instructions

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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.

Engineering materials include one or more of the following:	- metal - thermo setting and thermo plastic polymers - fibre glass - carbon fibre.
Shapes of metal materials include one or more of the following:	- sheet - plate - bar - angle iron - extruded forms - channel - beams.
Methods used to join metal includes one or more of the following:	- threaded fasteners - pins - circlips

	• rivets • welding • folded joints • adhesives.
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Unit Mapping Information

Release 1. Supersedes and is equivalent to MEMPE006A Undertake a basic engineering project.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEMPE006 Undertake a basic engineering project

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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 include:

- following work instructions and safe work practices
- selecting engineering materials and components for a project
- determining appropriate joining methods for engineering materials and components
- researching engineering projects for their appropriateness
- producing drawings of an assembled project and its components
- planning the manufacture of an engineering project, including all necessary calculations
- producing components following created drawings
- assembling project
- tidying and cleaning work area
- returning tools, equipment and project items to designated storage areas and/or condition.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

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

- safe work practices in an engineering workshop and use of personal protective equipment (PPE)
- sources of information on engineering materials and components
- sources of information on engineering projects
- engineering drawing practices, including need for drawings that others can follow
- methods of joining metals.
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Assessment Conditions

- Assessors must:
 - have vocational competency in undertaking a basic engineering project at least to the level being assessed with relevant industry knowledge and experience

- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015 or its replacement* and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring State as the case requires.
- This unit must be assessed in a learning institution and must cover the successful manufacture of a project and the skills developed would usually be developed by an individual working alone under direct supervision.
- Assessment **must be** in conjunction with assessment of all the skills and units integrated into the project
- Conditions for assessment must include access to all tools, equipment, materials and documentation required including relevant workplace procedures, product and manufacturing specifications.
- 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.
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