



Australian Government

MEM09216 Interpret and produce curved 3D shapes and patterns

Release: 1

MEM09216 Interpret and produce curved 3D shapes and patterns

Modification History

Release 1. Supersedes and is equivalent to MEM09216A Interpret and produce curved 3-D shapes and patterns.

Application

This unit of competency defines the skills and knowledge required to produce drawings of curved 3D shapes and patterns either manually or using computer-aided design (CAD) system.

It applies to drawing and lofting techniques to create 3D line plan drawings used within a marine vessel construction setting. Tasks may relate to drawings for hull designs, section development including curved and raking transom, conical development, camber development methods and general arrangement plans.

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

Competency Field

Drawing, drafting and design

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. Determine drawing/lofting requirements	1.1 Follow standard operating procedures (SOPs) and comply with work health and safety (WHS) requirements at all times 1.2 Confirm purpose, scope and information requirements for task 1.3 Interpret available information relevant to project and work requirements, and identify and address further information needs 1.4 Identify and prepare equipment required to complete work 1.5 Identify and apply relevant codes, standards and symbols relevant to work 1.6 Consult appropriate personnel to ensure the work is coordinated effectively with others involved in the project
2. Apply lofting (drafting) procedures	2.1 Apply workplace procedures to retrieve and apply required information

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	2.2 Set up drawing equipment and accessories to suit job requirements 2.3 Identify and apply drafting or lofting procedures to suit specified drawing requirements 2.4 Record alterations required to offset measurements as applicable 2.5 Produce loftings that are consistent with work and industry requirements
3. Submit lines and plan drawings	3.1 Ensure work meets specifications and submit drawings in accordance with SOPs 3.2 Supply any required altered offset measurements and relevant information related to drawing

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.

Requirements include one or more of the following:	• client brief • industry standards • survey specifications.
Submitted includes to one or more of the following:	• client • supervisor • boat builder/ship builder • surveying authority.
Industry standards relate to one or more of the following:	• accuracy • design • layout • tabulation of offsets • material specification

	• construction specifications • quality of presentation of drawings.
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Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM09216A Interpret and produce curved 3-D shapes and patterns.

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 MEM09216 Interpret and produce curved 3D shapes and patterns

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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, standard operating procedures (SOPs) and safe work practices
- determining purpose and scope for drawing requirements relevant to the project utilising all available information
- performing measurements and computations including geometric and numerical calculations relevant to the project
- interpreting and producing curved 3D shapes and patterns for hull designs on at least two occasions
- confirming curved 3D shapes and patterns accurately reflect specifications
- complying with organisational policies and procedures including quality requirements
- submitting drawings to appropriate personnel or organisations.

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 and procedures
- vessel design characteristics, including performance, stability and construction methods
- spatial concepts
- procedures used to produce line plan drawings and loftings
- drawing principles and conventions
- data requirements for producing line plan drawings
- numerical operations, geometry, calculations and formulae
- drawing techniques and procedures and use of equipment
- industry standards, terminology and symbols applying to lines plan drawings
- section development including curved and raking transom, conical development and camber development methods
- presentation requirements for completed work.

Assessment Conditions

- Assessors must:
 - have vocational competency in interpreting and producing curved 3D shapes and patterns 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/territory as the case requires
- Where possible, assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- 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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