



Australian Government

Department of Education, Employment and Workplace Relations

MEM19024A Use CAD to create and display 3D jewellery and object models

Release: 1

MEM19024A Use CAD to create and display 3D jewellery and object models

Modification History

Not applicable.

Unit Descriptor

This unit of competency covers the skills and knowledge required to use a computer-aided design (CAD) program to produce 3D drawings of jewellery and object models.

Application of the Unit

This unit applies to jewellery and object designers who are using CAD software and equipment to generate and document jewellery and object designs. Documentation may be used to inform production of jewellery or objects and incorporates standard practice notations and drawing protocols.

Band A
Unit Weight 4

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

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| 1 Determine project requirements | <ul style="list-style-type: none">1.1 Ensure applicable occupational health and safety (OHS), legislative and organisational requirements relevant to CAD applications are verified and complied with1.2 Review jewellery or object design brief and parameters to determine drawing and documentation requirements1.3 Examine sketches, drawings and other information and confirm calculations and measurements1.4 Select and prepare computing equipment and suitable software for jewellery or object designs |
| 2 Use CAD applications to produce 3D model and documentation | <ul style="list-style-type: none">2.1 Set up a 3D environment on the screen to allow multiple viewing2.2 Use editing tools to create features and dimensions of jewellery or object2.3 Manipulate drawing planes and shapes to create 3D view of jewellery or object2.4 Produce isometric, perspective and orthographic projections2.5 Extract mass and area properties of jewellery or object model2.6 Use principles of perspective to enhance the spatial illusion of jewellery or objects in space2.7 Apply basic rendering techniques to 3D model of jewellery or object2.8 Apply drawing protocols to refine and document drawing features |
| 3 Save and back up files | <ul style="list-style-type: none">3.1 Determine appropriate presentation for jewellery or object drawings3.2 Save and file drawings to allow easy access according to workplace documentation system |

Required Skills and Knowledge

Required knowledge includes:

- state or territory OHS legislation, regulations, standards and codes of practice relevant to the full range of processes for using CAD applications
- elements and principles of design
- terminology and symbols used in drawings and CAD software
- types of CAD equipment and procedures for their safe use, operation and maintenance
- computer programs and CAD applications
- drafting and drawing codes and practices relevant to jewellery and object design
- 2D and 3D drawing techniques
- appropriate mathematical procedures for estimation and measurement
- documentation control procedures
- problem identification and resolution techniques
- jewellery and object design and construction techniques
- rendering applications and techniques and tools for the creation of illustration effects
- region modelling techniques
- solid modelling techniques
- development of sectioned models
- use of cutting plane
- use of cross hatching
- use of pre-drawn library files and primitives to produce 3D models
- use of third level software to produce 3D models
- how to extract mass and area properties
- how to extract area properties from region models
- application of basic rendering techniques to a 3D model

Required skills include:

- communicating ideas and information to enable confirmation of work requirements and specifications
- reading and interpreting workplace documents, including working drawings
- using mathematical ideas and techniques to correctly complete measurements, calculate area and volume, and estimate other material requirements
- attending to detail
- planning own work within the given task parameters
- using workplace technology, including calculators, measuring and recording devices, and computing equipment

Evidence Guide

Overview of assessment	A person who demonstrates competency in this unit must be able to use a CAD program to produce 3D drawings and perspectives of jewellery or object designs.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently: • demonstrate accurate CAD techniques to create and display features of jewellery or object designs • produce 3D CAD models of jewellery or object designs from single, two and three point perspectives • communicate effectively and work safely with others in the work area.
Context of and specific resources for assessment	• This unit may be assessed on the job, off the job or a combination of both on and off the job. • Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. • Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.
Method of assessment	• Assessment must satisfy the endorsed Assessment Guidelines of the MEM05 Metal and Engineering Training Package. • Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge. • 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. • Assessment may be in conjunction with assessment of other units of competency where required.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.

Range Statement

Design features	Design features may include: • materials • dimensions • colours • shapes
Multiple viewing	Multiple viewing includes: • top views • front and side views • general 3D view
Shapes	Shapes may include: • arcs and lines • spheres • cones • cylinders • boxes
Rendering	Rendering is to include, but not be limited to: • the pictorial representation of aspects and perspectives using colours, highlighting and shading to provide depth and photo-like effects
Drawing protocols	Drawing protocols are to include, but not be limited to: • commonly used symbols • lettering standards • standard units of measurement • scale • numbering • legends • abbreviations

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Unit Sector(s)

Jewellery and horological

Custom Content Section

Not applicable.