Australian Government

Department of Education, Employment and Workplace Relations

CUVACD509A Develop and refine metal-working techniques

Release: 1

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Modification History

Version	Comments
CUVACD509A	This version first released with *CUV11 Visual Arts, Craft and Design Training Package version 1.0*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to develop and refine techniques for working with metal for a range of artistic and craft purposes. The unit focuses more on the technical rather than creative or aesthetic quality of the work, and it includes the requirement for a broad range of metal-working skills.

Application of the Unit

Any visual artist or designer who uses metal in their work must develop some technical proficiency with metal-working tools and materials. This technical proficiency is not equivalent to that of a metals tradesperson. Work must be undertaken according to safety requirements.
This work is undertaken independently with some guidance and mentoring available as required.

Licensing/Regulatory Information

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

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

Elements and Performance Criteria

1. Evaluate metal-working options for work projects	1.1 Evaluate how metalwork may be used in art and design practice to achieve desired outcomes or effects 1.2 Explore the potential of different metals and the technologies and tools required for their use 1.3 Investigate specific ***safety requirements associated with metalwork***, including appropriate licensing considerations 1.4 Make an assessment of capacity to safely use metalwork in own practice
2. Select and prepare metal-working materials, tools and equipment	2.1 Establish the needs and ***purposes*** of specific work projects in consultation with ***relevant people*** 2.2 Establish ***technical specifications*** and creative parameters for metalwork 2.3 Select and set up ***materials, tools*** and ***equipment*** following all safety requirements and instructions 2.4 Calculate correct quantities of materials, avoiding wastage where possible
3. Use metal-working techniques	3.1 Cut, bend and shape metal to specification using correct tools and following all required safety procedures 3.2 Apply soldering, brazing and welding techniques following all required safety procedures 3.3 Achieve different outcomes and effects through safe experimentation with various media and materials 3.4 Recognise and resolve metalwork ***technical and design problems*** 3.5 Achieve precision and accuracy in use of metal-working techniques 3.6 Apply safe strategies for the use, maintenance and storage of metal-working tools and equipment
4. Evaluate metalwork	4.1 Review metal items produced in terms of durability, quality of finish, and suitability for purpose 4.2 Assess the work in terms of its creative and aesthetic objectives 4.3 Identify and act on the potential for adjustment and refinement in future work

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to liaise with others about work requirements
- critical thinking and analytical skills to:
  - evaluate ways of achieving required effects and results
  - experiment with different metals and metal-working techniques
- literacy skills to:
  - read technical data and instructions about use of materials and tools
  - interpret technical information and instructions about the use of particular metal-working techniques
- planning and organising skills to select and organise materials and equipment
- problem-solving skills to identify and resolve technical metal-working issues
- numeracy skills to:
  - make calculations and measurements
  - use numerical features of metal-working equipment
- self-management skills to evaluate the quality of own work and identify opportunities for improvement
- technical skills to safely use materials, tools and equipment for metal-working processes.

Required knowledge

- current metal-working technologies and equipment and their application to different purposes
- properties and applications of metal-working materials and techniques
- reasons for the use of particular materials and techniques to achieve particular effects
- common technical problems that arise in the metal-working processes of cutting, bending, shaping, soldering, brazing and welding
- sustainability considerations for metal-working
- OHS requirements for materials and equipment used in metal-working.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • produce multiple metal items that are technically sound • apply safe work practices with metal-working equipment and materials • apply knowledge of the properties of metals and their behaviour.
Context of and specific resources for assessment	Assessment must ensure access to: • metal-working materials, tools and equipment • a work space in which items can be constructed safely.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct observation of the candidate using metal-working techniques • questioning and discussion about candidate's work processes • review of portfolios of evidence • review of third-party reports from experienced practitioners. Assessment methods should closely reflect workplace demands (e.g. literacy) and the needs of particular groups (e.g. people with disabilities, and people who may have literacy or numeracy difficulties, such as speakers of languages other than English, remote communities and those with interrupted schooling).
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Safety requirements associated with metalwork may relate to:	• protective clothing • use of chemicals • use of gas • use of hot materials • work space set-up.
Purposes may be to create:	• art • functional items (one-off or multiples) • models • props • prototypes • samples.
Relevant people may include:	• artists • designers • mentors • metal-working experts • production personnel • supervisors • teachers • tradespeople.
Technical specifications may relate to:	• cost of production • durability and strength • how and where the item is to be viewed or placed • number and size of items to be produced • type of material to be used.
Materials may include:	• ferrous metals • non-ferrous metals.

Tools may include:	• benders
	• croppers
	• drop hammers
	• saws:
	  • automatic
	  • band
	  • cold

	• hand • rollers • soldering irons • straight line cutters.
Equipment may include:	• gas cylinders • jigs • welding machines • work benches.
Technical and design problems may relate to:	• aesthetic appeal • availability of materials • durability and strength • time for production.

Unit Sector(s)

Visual communication – art, craft and design

Custom Content Section

Not applicable.