



Australian Government

Department of Education, Employment and Workplace Relations

MEM19028A Select materials and new technologies for jewellery and 3D object design applications

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit of competency covers the skills and knowledge required to select materials and technologies for jewellery and 3D object design applications. It includes evaluating the benefits and limitations of different materials and technologies and determining best options to meet specific design and application requirements.

Application of the Unit

This unit applies to designers of jewellery and 3D objects. Application of this unit includes selection of materials and technologies to suit individual handcrafted designs or mass production.

Band A
Unit Weight 2

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 | Select materials for jewellery or object applications | 1.1 | Identify properties, features and typical applications of metals in jewellery or objects |
| | | 1.2 | Identify properties, features and typical applications of alternative materials in jewellery or objects |
| | | 1.3 | Evaluate materials for suitability and compatibility against jewellery design requirements, product descriptions and/or drawings |
| | | 1.4 | Consider benefits and limitations of working with or adding materials against the design brief |
| | | 1.5 | Identify and compare alternative options and, if necessary, consult with appropriate persons |
| | | 1.6 | Select final materials based on design requirements, design considerations, drawings, product description, principal material properties and requirements |
| | | 1.7 | Confirm selection of materials with appropriate persons |
| 2 | Select manufacturing technologies and processes for jewellery or object applications | 2.1 | Identify jewellery or object manufacturing technologies and processes for jewellery and 3D object production |
| | | 2.2 | Identify manufacturing technologies and processes suited to jewellery and 3D object applications and materials |
| | | 2.3 | Consider capabilities and limitations of different technologies against design brief and other design considerations |
| | | 2.4 | Identify and compare alternative technologies and processes and consult with appropriate persons |
| | | 2.5 | Select manufacturing technologies and processes based on design considerations, drawings, product description and application of selected materials |
| | | 2.6 | Confirm selection of jewellery or object manufacturing technologies with appropriate personnel |
| 3 | Finalise drawing for presentation | 3.1 | Select drawing presentation and production technique to enhance jewellery or object design features and to appeal to the intended audience |
| | | 3.2 | Use/store/file/copy/issue working and reference drawings/illustrations in accordance with standard operating procedures |
| | | 3.3 | Prepare supporting information to accompany drawing, as required |

Required Skills and Knowledge

Required knowledge includes:

- properties and features and typical applications of precious metals and alloys, base and refractory metals
- types of alternative materials
- advantages and drawbacks of particular materials
- properties and features and typical applications of alternative materials
- manufacturing technologies and processes suitable to jewellery and 3D object production
- advantages and drawbacks of different technologies and processes

Required skills include:

- identifying design requirements and design considerations
- matching materials and technologies to design requirements and design considerations
- comparing and evaluating various materials and technologies

Evidence Guide

Overview of assessment	A person who demonstrates competency in this unit must be able to apply a range of drawing techniques to demonstrate features of jewellery or object construction and prepare drawing for presentation according to the audience needs.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently: • apply OHS workplace procedures and practices, including the use of risk control measures • identify benefits and limitations of materials and manufacturing processes in achieving outcomes in jewellery and object design applications • select materials for jewellery and 3D object applications • select manufacturing technologies and processes for jewellery and 3D object applications.
Context of and specific resources for assessment	• Assessment may occur on the job or in an appropriately simulated environment. Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices. • 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

Features and properties	Features and properties may include: • physical properties and behaviour • visual appearance • colour • availability/rarity
Design considerations	Design considerations may include: • cost/economic viability • policy/preference • manufacturing requirements • aesthetic value • relevance to the design proposal • practicality • safety • ergonomics • cultural and social influences • sustainability
Appropriate personnel	Appropriate personnel may include: • supervisor • manager • trainer • mentor • teacher • team member • client
Metals	Metals may include: • precious metals and alloys • base metals • refractory metals
Alternative materials	Alternative materials may include: • plastics and polymers • resins • ceramics • composites • synthetic materials • naturally found objects • wood • rubber

	• silicon • glass
Manufacturing technologies and processes	Manufacturing technologies and processes may include: • water jet and laser cutting • casting (clay, vacuum and centrifugal) • pressing and stamping • forging • welding • rolling and extruding • machining • spinning • anodising and electroplating • powder coating • moulding • rapid prototyping
Occupational health and safety (OHS) requirements	OHS requirements may include: • legislation • protective equipment • material safety management systems • hazardous substances and dangerous goods code • local safe operation procedures • awards provisions
Environmental requirements	Environmental requirements may relate to: • liquid waste • solid waste • gas, fumes, vapour, smoke emissions, including fugitive emissions, and dust • excessive energy and water use • excessive noise
Enterprise procedures	Enterprise procedures may include: • the use of tools and equipment • instructions, including job sheets, cutting lists, plans, drawings and designs • reporting and communication • manufacturer specifications • operational procedures

Unit Sector(s)

Jewellery and horological

Custom Content Section

Not applicable.