



Australian Government

AUMAMA003 Prepare new product designs

Release: 1

AUMAMA003 Prepare new product designs

Modification History

Release	Comment
Release 1	Unit updated to reflect the new standards for Training Packages Replaces AUMAMA4003 Prepare new product designs

Application

This unit describes the performance outcomes required to assist professional and other personnel in the planning and design of new products or sub-assemblies.

It applies to those in an automotive environment.

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

Competency Field

Manufacturing - Common

Unit Sector

Management, Leadership and Supervision

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section
1. Establish design requirements	1.1 New product design information is identified from customer needs and <i>workplace requirements</i> 1.2 Product information is gathered and analysed, and work plan is developed 1.3 Constraints on design concepts are identified and documented 1.4 Suitable strategies are developed to address identified design constraints
2. Create design concept	2.1 Initial design concept based on identified requirements is

Elements	Performance Criteria
	created 2.2 Function, physical requirements and impact of the design concept are reviewed with appropriate personnel 2.3 Modifications to the initial design concept are made according to feedback provided by engineering, marketing and other appropriate personnel
3. Produce concept sketches	3.1 Sketches are prepared to illustrate and explain proposed design concept 3.2 Concept sketches are reviewed and evaluated in consultation with engineering, marketing and other appropriate personnel and suitable changes are made 3.3 Critical dimensions and data of design concept are identified 3.4 Drawings of components and sub-assemblies are prepared with required level of accuracy 3.5 Materials, components and related costs are estimated in consultation with engineering, marketing and other appropriate personnel
4. Determine suitable manufacturing methods, materials and processes	4.1 Suitable manufacturing methods are identified for the production of components and sub-assemblies 4.2 Suitable manufacturing methods and materials are identified for the production of components and sub-assemblies 4.3 Suitable assembly and finishing methods for components and sub-assemblies are identified and evaluated
5. Evaluate feasibility	5.1 Proposed manufacturing processes are evaluated against the design requirements in consultation with design, engineering, marketing and other appropriate personnel 5.2 Suitable trials of the design are devised and conducted, and outcomes are documented
6. Modify design	6.1 Product design is suitably modified, based on the outcomes of the feasibility evaluations and trials 6.2 Further trials and testing is conducted to confirm the suitability of the modified design against requirements 6.3 Outcomes of the modification and trialling of the new design concept are documented according to workplace procedures
7. Complete work processes	7.1 Design of the new product is documented according to workplace procedures 7.2 Design documentation is processed for approval according to workplace procedures 7.3 Design documentation is stored and distributed according to workplace procedures

Foundation Skills

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

Skills	Description
Reading skills to:	- identify and gather information on customer needs, competitor products, workplace objectives, fashion trends, safety needs and relevant workplace requirements - interpret the outcomes of feasibility evaluations and trials.
Writing skills to:	legibly document new design requirements, concept constraints, trials, modification outcomes and the final new product design.
Oral communication skills to:	- consult with appropriate personnel to review the design concept and sketches - evaluate manufacturing methods with production engineering personnel, marketing and other appropriate personnel.
Teamwork skills to:	work effectively with a wide range of people while reviewing and evaluating the design process.
Numeracy skills to:	- calculate critical dimensions and interpret data - prepare 2D and 3D drawings - calculate estimates of required materials, components and related costs - document outcomes of the modification and trialling of the new design concept using mathematical language.
Digital Literacy skills to:	use computer systems for drawing and sketching.
Planning and Organising skills to:	meet work plan.
Problem Solving skills to:	develop the design, to work within constraints, to respond to feedback from evaluation and trials.

Range of Conditions

This section specifies 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. Bold italicised wording, if used in the performance criteria, is detailed below.

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<i>Workplace requirements</i> must include:	• Australian Design Rules (ADR) • industry codes of practice • vehicle modification standards.
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Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=bd587669-08b3-4cd5-85f0-f9fa0c6304c1>

Assessment Requirements for AUMAMA003 Prepare new product designs

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Performance Evidence

Before competency can be determined, individuals must have competently prepared a new product design on a minimum of three occasions.

Individuals must demonstrate they can:

- create initial design concepts
- modify initial design concepts to reflect feedback
- produce design drawings of components and sub-assemblies
- identify and evaluate the manufacturing method of the new product and perform trials
- modify the product design as necessary and conduct further tests
- document the design process of the new product.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- principles of design as they relate to product design
- methods of establishing new design requirements, including determining constraints of design concepts
- methods of creating design concepts, including producing design sketches
- methods of quantifying design concepts, including calculating dimensions
- selecting and justifying the selection of:
 - type of materials and material specifications
 - appropriate processes for a range of product and market applications
- calculating product cost estimates, process time and cost benefit of new product to organisation
- work health and safety (WHS) requirements and workplace procedures relating to preparing new product designs
- design procedures and prototyping activities relating to preparing new product designs
- material and product testing procedures

- design process documentation, records and reports relating to new product designs.

Assessment Conditions

Assessors must satisfy SNR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the product designs that they have prepared.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- automotive manufacturing workplace or simulated workplace
- drawing equipment
- workplace procedures relating to the preparation of new product designs
- tools, equipment and machinery required for the production process of motor vehicles and components
- sources of information from which to determine customer needs, competitor products, workplace objectives, fashion trends, safety needs and relevant legislative requirements for new product design
- workplace documentation relating to preparing new product designs.

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