Australian Government

Department of Education, Employment and Workplace Relations

AUMAMA4003 Prepare new product designs

Release: 1

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Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the application of the required skills and knowledge to assist professional and other staff in the planning and design of new products or sub-assemblies. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit	The unit applies to the automotive and related component manufacturing environment and involves application of skills and knowledge to be used within the scope of the person's job and authority.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Employability skills	This unit contains Employability Skills.

Elements and Performance Criteria Pre-Content

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

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish design requirements	1.1. Information on customer needs, competitor products, organisation objectives, fashion trends, safety needs, relevant ***legislative*** and ***organisation requirements*** is gathered 1.2. Information gathered is analysed to develop key requirements needed in new designs 1.3. Requirement of new design is documented in accordance with organisation procedures
2. Identify constraints	2.1. Constraints on design concepts (such as market price or size, production capability, product complexity) are identified and documented 2.2. Suitable strategies are developed to address identified constraints on designs
3. Create design concept	3.1. An initial design concept based on identified design requirements and constraints is created 3.2. Function, physical requirements and impact of the design concept are reviewed in consultation with ***appropriate personnel*** 3.3. Modifications to the initial design concept are made in accordance with feedback provided by engineering and marketing and other appropriate personnel
4. Produce concept sketches	4.1. Sketches are prepared to illustrate and explain proposed design concept(s) 4.2. Concept sketches are reviewed in consultation with engineering, marketing and other appropriate personnel and suitable changes made in accordance with a critical evaluation of the proposed design
5. Quantify design concept	5.1. Critical dimensions and data of a design concept are identified and quantified 5.2. Drawings are prepared to required accuracy to enable suitable manufacturing methods to be identified and evaluated 5.3. Estimates of required materials, components and related costs are calculated in conjunction with engineering, marketing and other appropriate personnel
6. Determine suitable production methods, materials and processes	6.1. Components and sub-assemblies are drawn in accordance with the design requirements 6.2. Suitable manufacturing methods are identified for the production of components and sub assemblies 6.3. Identified manufacturing methods for components and sub-assemblies are evaluated in conjunction with production engineering staff

ELEMENT	PERFORMANCE CRITERIA
	6.4. Suitable assembly and finishing methods for the proposed product design are identified and evaluated
7. Evaluate feasibility	7.1. The proposed design and manufacturing processes are evaluated against the design requirements in conjunction with design, engineering, marketing and other appropriate personnel 7.2. Suitable trials and tests of the design are devised and conducted
8. Modify design	8.1. The product design is suitably modified, based on the outcomes of the feasibility evaluations and trials 8.2. Further tests are conducted to confirm the suitability of the modified design against the identified design requirements 8.3. The outcomes of the modification and testing of the new design concept are documented in accordance with organisation requirements
9. Complete documentation	9.1. The design of the new product is documented in accordance with organisation requirements 9.2. The design documentation is processed for approval 9.3. The design documentation is stored and distributed in accordance with organisation requirements

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills

- speak clearly and directly in order to communicate identified and potential constraints in the design process to appropriate personnel
- apply teamwork to a range of situations
- solve problems particularly in teams in order to meet performance indicators
- show initiative in adapting to changing work conditions or contexts particularly when working across a variety of work areas
- access, interpret and apply information on relevant organisation policies, procedures and instructions, particularly to ensure the product produced meets all relevant legislative and safety requirements
- manage time when planning, preparing and organising work priorities
- take responsibility for organising own work priorities.

Required knowledge

- relevant Occupational Health and Safety and Environmental regulations and organisation policies and procedures needed to carry out work in a manner which ensures the safety of people, equipment and the environment.
- technical work documentation covering procedures, specifications, schedules and work plans or equivalent
- quality system documentation covering instructions, procedures, performance indicators and review processes or equivalent
- cost minimisation/waste avoidance policies, procedures and practices
- environmental protection requirements relating to the disposal of waste material
- established communication channels and protocols
- problem identification and resolution techniques
- planning the processes for development of new products/sub-assemblies
- read and interpret drawing symbols
- design principles, processes and constraints
- product evaluation procedures
- design documentation requirements
- interpretation and application of ADRs, State legislation, ASA and other codes.

Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the following is essential: • compliance with relevant legislative, regulations, standards, codes of practice and establish safe practices and organisation policies and procedures for managing personal work priorities • maintaining a working knowledge of current work systems and practices • working and communicating effectively and positively with others involved in the work • applying, within authority, the requirements of the job or work role in relation to: • achieving production goals • achieving work quality goals • responding positively to changing work requirements • contributing effectively to cost reduction initiatives • effectively applying problem solving techniques • modify activities to cater for variations in organisation context and environment • establish and quantify design requirements • determine suitable production methods, materials and processes • identify design constraints • produce concept sketches and evaluate feasibility • modify and document designs - paper based / electronic.
Context of and specific resources for assessment	• assessment of the competency should take place in a safe working environment in a passenger motor vehicle manufacturing plant or simulated environment using tools/equipment/machinery required for the production process without undue disruption to the production process • assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints.
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: • assessment methods must confirm consistency and accuracy of performance (over time and in a range of organisation relevant

EVIDENCE GUIDE	
	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.

Range Statement

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 in the Performance Criteria is detailed below. Add any 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.	
Legislative requirements and procedures may include:	Applicable legislation, regulations and codes of practice, including those related to: • anti-discrimination • award and organisation agreements • confidentiality and privacy • duty of care • employee relations • environment protection • equal opportunity • industrial relations • relevant industry codes of practice.
Organisation requirements may include:	• access and equity principles and practices • environmental management (waste disposal, recycling and re-use guidelines) • emergency and evacuation procedures • equipment use procedures • ethical standards • legal obligations • maintenance and storage procedures • OHS requirements • organisational and site guidelines • policies and procedures relating to own role and responsibility • procedural manuals • quality assurance guidelines • quality and continuous improvement processes and standards • recording and reporting guidelines.
Appropriate personnel may include:	• clients and managers • supervisors • suppliers • team leaders • team members.

Unit Sector(s)

Unit sector	Teamwork, Supervision and Management

Competency field

Competency field	Manufacturing - Common

Co-requisite units

Not applicable.