ASC/N8114: Computer Aided Product Design

Description

This NOS unit is about creating the design of vehicle components and systems by using appropriate computer graphic techniques and software.

Scope

The scope covers the following:

- Prepare for product designing
- Perform designing of the component
- Perform post-designing activities

Elements and Performance Criteria

Prepare for product designing

To be competent, the user/individual on the job must be able to:

PC1. obtain the vehicle component design requirements and specifications such as material used for making the component, packaging and other requirements to decide the dimensions, measurements and tolerances of the aggregate/component and instructions from the design team or supervisor

PC2. use designing software like CATIA, AutoCAD, Unigraphics etc. for creating the designs

PC3. refer any issues related to design concept clarity, dimensions and practicality to competent internal specialist or supervisor if they cannot be resolved by own

Perform designing of the component

To be competent, the user/individual on the job must be able to:

PC4. set the given specifications and dimension parameters of required product design in a CAD file

PC5. insert sketches, scanned images, diagrams, signs or symbols, etc. in the CAD file as per the design requirement

PC6. create a 3D model of product by using CAD techniques as per the design specifications and parameters received

PC7. prepare layouts and various views of drawing to generate a relationship between components and assemblies

PC8. apply different drawing/ drafting aids like colours, symbols etc. to highlight areas in the drawings

PC9. test the 3D model through simulation/ packaging study on the feasibility of actual product as per the customer requirement

PC10. create 2D drawing of the component as per the SOP/WI

PC11. maintain CAD files, backup of CAD files, notes and records related to design as per SOP

Perform post-designing activities

To be competent, the user/individual on the job must be able to:

PC12. submit the design to supervisor / design team for review and feedback

PC13. rework or modify the design on the 2D drawings as per the feedback received

PC14. tag and store the drawings with the right numbers and codes properly as per the organisational guidelines

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant standards and procedures followed in the company

KU2. various requirements in terms of design and utility of the component

KU3. different types of designing processes and associated software like CATIA, AutoCAD, Unigraphics etc.

KU4. Draughting Standards & Techniques- e.g. ANSI series IS/ ISO

KU5. technical drawing practices as per the company standards

KU6. drawings and modelling techniques like 2D and 3D

KU7. different type of views generated in engineering drawings

KU8. computer programming and drafting

KU9. Limits & Fits, GD&T etc.

KU10. algebra and trigonometric rules and applications

KU11. how to interpret Tolerance Analysis sheet supplied by the design team

KU12. how to check various dimensional mismatches which may happen on the actual product assembly

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. read and interpret notes, designs and instructions shared by different internal team

GS2. communicate the process requirements to the supervisor and co-workers

GS3. attentively listen and comprehend the information given by the supervisor/team members

GS4. write work related information in English/regional language

GS5. recognise a workplace problem and take suitable action

GS6. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS7. plan and organise work according to the work requirements

GS8. complete the assigned tasks with minimum supervision

GS9. visualize designs

GS10. share technical information clearly using appropriate language

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for product designing	**7**	**9**		**4**
PC1. obtain the vehicle component design requirements and specifications such as material used for making the component, packaging and other requirements to decide the dimensions, measurements and tolerances of the aggregate/component and instructions from the design team or supervisor	2	3		2
PC2. use designing software like CATIA, AutoCAD, Unigraphics etc. for creating the designs	3	4		1
PC3. refer any issues related to design concept clarity, dimensions and practicality to competent internal specialist or supervisor if they cannot be resolved by own	2	2		1
Perform designing of the component	**17**	**36**		**12**
PC4. set the given specifications and dimension parameters of required product design in a CAD file	3	5		2
PC5. insert sketches, scanned images, diagrams, signs or symbols, etc. in the CAD file as per the design requirement	3	5		2
PC6. create a 3D model of product by using CAD techniques as per the design specifications and parameters received	2	5		1
PC7. prepare layouts and various views of drawing to generate a relationship between components and assemblies	2	5		1
PC8. apply different drawing/ drafting aids like colours, symbols etc. to highlight areas in the drawings	2	5		1
PC9. test the 3D model through simulation/ packaging study on the feasibility of actual product as per the customer requirement	2	5		2
PC10. create 2D drawing of the component as per the SOP/WI	1	3		2

PC11. maintain CAD files, backup of CAD files, notes and records related to design as per SOP	2	3		1
Manage post-designing activities.	**6**	**5**		**4**
PC12. submit the design to supervisor / design team for review and feedback	2	1		1
PC13. rework or modify the design on the 2D drawings as per the feedback received	2	2		2
PC14. tag and store the drawings with the right numbers and codes properly as per the organisational guidelines	2	2		1
NOS Total	**30**	**50**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N8114
NOS Name	Computer Aided Product Design
Sector	Automotive
Sub-Sector	Research and Development
Occupation	Automotive Product Designing
NSQF Level	5.5
Credits	4
Version	1.0
Last Reviewed Date	29/09/2023
Next Review Date	29/09/2026
NSQC Clearance Date	29/09/2023