

Assessment Evidence Guide

For

“CAD Operator”

Level-3

Develop 3D Surfaces in AutoCAD

(Formative Assessment)



**National Vocational & Technical
Training Commission**

Instruction Sheet for the Candidate

Title of Qualification: National Certificate of level 3 in Computer Aided Design & Manufacturing (CAD Operator)	CS Code:	Level:3	Version:01
Competency Standard Title: Develop 3D Surfaces in AutoCAD	Assessment Date (DD/MM/YY): Assessment Time:		

Candidate Details	Name: Registration/Roll Number:
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <p>Assessment Task 1: Candidate is required to develop different 3D surfaces in 3D Auto CAD as per instruction given by assessor.</p> <p>And complete:</p> <ol style="list-style-type: none"> Knowledge assessment test (Written or Oral) Portfolios at the time of assessment (if any)
Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1: Apply different Mesh primitive options including;</p> <ul style="list-style-type: none"> Box Cone Cylinder Pyramid Sphere Wedge Tours <p>Performance Criteria 2: Apply smoothness and refinement on Meshes (even legacy 2D drawings) with following commands;</p> <ul style="list-style-type: none"> MESHSMOOTHMORE MESHSMOOTHLESS MESHSMOOTHREFINE

	<p>Performance Criteria 3: Add or Remove Mesh Creases using;</p> <ul style="list-style-type: none"> • MESHCREASE • MESHUNCREASE <p>Performance Criteria 4: Enable Mesh editing using;</p> <ul style="list-style-type: none"> • MESHEXTRUDE • MESHSPILT (midpoint) • MESHMERGE • MESHCAP (close hole) <p>Performance Criteria 5: Perform convert Meshes using the command: CONVOTOSURFACE</p> <p>Performance Criteria 6: Develop following Surfaces;</p> <ul style="list-style-type: none"> • Revolved Surface (REVSURF) • Tabulated Surface (TABSURF) • Ruled Surface (RULESURF) using “Surftab” variables • Edge Surface (EDGESURF) • Plane Surface (PLANESURF) • Extrude Surface (EXTRUDE) <p>Performance Criteria 7: Create 3D solid or surface in the space between several cross sections:</p> <ul style="list-style-type: none"> • Using “LOFT” command. • Sweeping a 2D or 3D curve along a path using “SWEEP” command. <p>Performance Criteria 8: Build Surface Network.</p> <p>Performance Criteria 9: Create a blend surface between two existing surfaces using “SURFBLEND” command.</p> <p>Performance Criteria 10: Edit the existing surfaces through:</p> <ul style="list-style-type: none"> • Fillet • Trim • Un trim • Extend • Sculpt <p>Performance Criteria 11: Convert object to NURBS using “CONVTONURBS” command.</p>
	<p>Portfolios required at the time of assessment (if any) for</p>

Assessors Judgment Guide

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Observation Checklist

Assessment Task 1		Description of Assessment Task 1		
		Candidate is required to develop different 3D surfaces in 3D Auto CAD as per instruction given by assessor.		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Apply different Mesh primitive options including; <ul style="list-style-type: none"> • Box • Cone • Cylinder • Pyramid • Sphere • Wedge 			
2.	Apply smoothness and refinement on Meshes (even legacy 2D drawings) with following commands; <ul style="list-style-type: none"> • MESHSMOOTHMORE • MESHSMOOTHLESS • MESHSMOOTHREFINE 			
3.	Add or Remove Mesh Creases using; <ul style="list-style-type: none"> • MESHCREASE • MESHUNCREASE 			
4.	Enable Mesh editing using; <ul style="list-style-type: none"> • MESHEXTRUDE • MESHSPILT (midpoint) • MESHMERGE • MESHCAP (close hole) 			
5.	Perform convert Meshes using the command: CONVTOSURFACE			
6.	Develop following Surfaces; <ul style="list-style-type: none"> • Revolved Surface (REVSURF) • Tabulated Surface (TABSURF) • Ruled Surface (RULESURF) using "Surftab" variables • Edge Surface (EDGESURF) • Plane Surface (PLANESURF) • Extrude Surface (EXTRUDE) 			

7.	Create 3D solid or surface in the space between several cross sections: <ul style="list-style-type: none">• Using “LOFT” command.• Sweeping a 2D or 3D curve along a path using “SWEEP” command.			
8.	Build Surface Network			
9.	Create a blend surface between two existing surfaces using “SURFBLEND” command.			
10.	Edit the existing surfaces through: <ul style="list-style-type: none">• Fillet• Trim• Un trim• Extend• Sculpt			
11.	Convert object to NURBS using “CONVTONURBS” command.			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		
Each Assessment Task (with performance criteria)				

Knowledge Assessment

Title of Qualification: National Certificate of level 3 in Computer Aided Design & Manufacturing (CAD Operator)	CS Code:	Level: 3	Version: 01
Competency Standard Title: Develop 3D Surfaces in AutoCAD	Assessment Date (DD/MM/YY): Assessment Time: 30 min		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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Candidate Details	Name:..... Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
1. SU is short key for?	
2. Where path command used?	
3. Enlist three different views?	

Assessment Evidence Guide

For

“CAD Operator”

Level-3

Develop 3D Model in AutoCAD

(Formative Assessment)



**National Vocational & Technical
Training Commission**

Instruction Sheet for the Candidate

Title of Qualification: National Certificate of level 3 in Computer Aided Design & Manufacturing (CAD Operator)	CS Code:	Level: 3	Version: 01
Competency Standard Title: Develop 3D Model in AutoCAD	Assessment Date (DD/MM/YY): Assessment Time:		

Candidate Details	Name: Registration/Roll Number:
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <p>Assessment Task 1: Candidate is required to develop 3 D objects as per instruction given by assessor</p> <p>Assessment Task 2: Candidate is required to manipulate 3D objects using 3D editing tools as per instruction given by assessor</p> <p>Assessment Task3: Candidate is required to render 3D model as per instruction given by assessor</p> <p>And complete:</p> <ol style="list-style-type: none"> Knowledge assessment test (Written or Oral) Portfolios at the time of assessment (if any)
Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1: Setup 3D drawing interface for required specifications.</p> <p>Performance Criteria 2: Setup 3D user interface settings for required specifications.</p> <p>Performance Criteria 3: Create 3D objects with given measurements.</p> <hr/> <p>Assessment Task 2</p> <p>Performance Criteria 1: Modify 3D objects in line with the requirements.</p> <p>Performance Criteria 2: Make customized 3D models according to the requirement of given job.</p> <p>Performance Criteria 3: Convert 3D Face objects into a single mesh object.</p>

	<p>Assessment Task 3</p> <p>Performance Criteria 1: Modify 3D objects in line with the requirements.</p> <p>Performance Criteria 2: Apply material to required 3D Model as per given specification</p> <p>Performance Criteria 3: Apply lights to get the requisite scene of required 3D model</p> <p>Performance Criteria 4: Assign cameras to execute different views of required 3D Model.</p> <p>Performance Criteria 5: Render and print the 3D model according to required size & orientation.</p> <p>Performance Criteria 6: Apply texture to 3D model as per given specification.</p>
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Assessors Judgment Guide

(To be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Observation Checklist

Assessment Task 1		Description of Assessment Task 1 develop 3 D objects as per instruction given by assessor		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Setup 3D drawing interface for required specifications.			
2.	Setup 3D user interface settings for required specifications.			
3.	Create 3D objects with given measurements.			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task 2		Description of Assessment Task 2 manipulate 3D objects using 3D editing tools as per instruction given by assessor		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Modify 3D objects in line with the requirements.			
2.	Make customized 3D models according to the requirement of given job.			
3.	Convert 3D Face objects into a single mesh object.			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task3		Description of Assessment Task 3		
		render 3D model as per instruction given by assessor		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Modify 3D objects in line with the requirements.			
2.	Apply material to required 3D Model as per given specification			
3.	Apply lights to get the requisite scene of required 3D model			
4.	Assign cameras to execute different views of required3D Model.			
5.	Render and print the 3D model according to required size& orientation.			
6.	Apply texture to 3D model as per given specification.			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Knowledge Assessment

Title of Qualification: National Certificate of level 3 in Computer Aided Design & Manufacturing (CAD Operator)	CS Code:	Level: 3	Version: 01
Competency Standard Title: Develop 3D Model in AutoCAD	Assessment Date (DD/MM/YY): Assessment Time: 30 min		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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Candidate Details	Name: Registration/Roll Number: Candidate Signature:
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
1. Enlist any three commands for 3D modeling?	
2. Where is 3D command in AutoCAD?	
3. What is 3D AutoCAD called?	

Assessment Evidence Guide

For

“CAD Operator”

Level-3

Develop 3D Model in Sketch Up

(Formative Assessment)



**National Vocational & Technical
Training Commission**

Instruction Sheet for the Candidate

Title of Qualification: National Certificate of level 3 in Computer Aided Design & Manufacturing (CAD Operator)	CS Code:	Level: 3	Version: 01
Competency Standard Title: Develop 3D Model in Sketch Up	Assessment Date (DD/MM/YY): Assessment Time:		

Candidate Details	Name: Registration/Roll Number:
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <p>Assessment Task 1: Candidate is required to develop and modify 3D objects and apply material/texture and render as per instructions given by assessor.</p> <p>And complete:</p> <ol style="list-style-type: none"> 1. Knowledge assessment test (Written or Oral) 2. Portfolios at the time of assessment (if any)

Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1: Set up template for required specifications.</p> <p>Performance Criteria 2: Import/create 2D Drawing/image as per assigned specification.</p> <p>Performance Criteria 3: Create 3D object from 2D drawing/image in line with given measurements.</p> <p>Performance Criteria 4: Navigate 3D objects as per required job.</p> <p>Performance Criteria 5: Modify 3D objects in line with the requirements.</p> <p>Performance Criteria 6: Create/assign specified materials and textures to 3D Model.</p> <p>Performance Criteria 7: Edit materials and textures to get realistic outcome.</p> <p>Performance Criteria 8: Install plug-ins to meet specific outcome as per requirement.</p> <p>Performance Criteria 9: Add scene of 3D model according to specification</p> <p>Performance Criteria 10: Add lights for illumination to get the requisite scene of 3D model.</p> <p>Performance Criteria 11: Assign cameras to execute different views of 3D Model.</p> <p>Performance Criteria 12: Add Render Components to make scene more realistic.</p> <p>Performance Criteria 13: Render the 3D model according to required image size or resolution& orientation.</p>
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Assessors Judgment Guide

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Observation Checklist

Each Assessment Task (with performance criteria)				
Assessment Task 1	Description of Assessment Task 1 develop and modify 3D objects and apply material/texture and render as per instructions given by assessor.			
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Set up template for required specifications.			
2.	Import/create 2D Drawing/image as per assigned specification.			
3.	Create 3D object from 2D drawing/image in line with given measurements.			
4.	Navigate 3D objects as per required job.			
5.	Modify 3D objects in line with the requirements.			
6.	Create/assign specified materials and textures to 3D Model.			
7.	Edit materials and textures to get realistic outcome.			
8.	Install plug-ins to meet specific outcome as per requirement.			
9.	Add scene of 3D model according to specification			
10.	Add lights for illumination to get the requisite scene of 3D model.			
11.	Assign cameras to execute different views of 3D Model.			
12.	Add Render Components to make scene more realistic.			
13.	Render the 3D model according to required image size or resolution& orientation.			

Competent <input type="checkbox"/>	Not Yet Competent <input type="checkbox"/>
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Knowledge Assessment

Title of Qualification: National Certificate of level 3 in Computer Aided Design & Manufacturing (CAD Operator)	CS Code:	Level: 3	Version: 01
Competency Standard Title: Develop 3D Model in Sketch Up	Assessment Date (DD/MM/YY): Assessment Time: 30 min		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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candidate Details	Name:..... Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
1. What are the benefits of Sketchup?	
2. Enlist any three commands used in Sketchup?	
3. What is Ctrl+ D in Sketchup?	

Assessment Evidence Guide

For

“CAD Operator”

Level-3

Manipulate Images in

(Formative Assessment)



**National Vocational & Technical
Training Commission**

Instruction Sheet for the Candidate

Title of Qualification: National Certificate of level 3 in Computer Aided Design & Manufacturing (CAD Operator)	CS Code:	Level: 3	Version: 01
Competency Standard Title: Manipulate Images in Adobe Photoshop Maintain Safety at Workplace Work in a Team Environment	Assessment Date (DD/MM/YY): Assessment Time:		

Candidate Details	Name: Registration/Roll Number
Guidance for Candidate	<p>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration & assessment):</p> <p>Assessment Task 1: Candidate is required to manipulate different images as per instruction given by assessor.</p> <p>And complete:</p> <ol style="list-style-type: none"> 3. Knowledge assessment test (Written or Oral) 4. Portfolios at the time of assessment (if any)

Minimum Evidence Required	<p>During a practical assessment, under observation by an assessor, you will complete:</p> <p>Assessment Task 1</p> <p>Performance Criteria 1: Select the required tool and apply on image</p> <p>Performance Criteria 2: Create layers and open image or draw object or image on layer.</p> <p>Performance Criteria 3: Select all objects on a specific layer and also move object from one layer to another layer and also copy past the object on different layer</p> <p>Performance Criteria 4: Lock or unlock the object or layers. And also merge the layers</p> <p>Performance Criteria 5: Draw different shapes as required</p> <p>Performance Criteria 6: Reshape the objects</p> <p>Performance Criteria 7: Align the objects as required</p> <p>Performance Criteria 8: Transform the objects as required</p> <p>Performance Criteria 9: Design the Shapes as required</p> <p>Performance Criteria 10: Save the Shapes or objects in jpg, png etc. format.</p> <p>Performance Criteria 11: Check leads and cable for any visual damage before use</p> <p>Performance Criteria 12: Express your own opinions</p>
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Assessors Judgment Guide

(to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: Registration/Roll Number: Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Observation Checklist

Assessment Task 1		Description of Assessment Task 1 manipulate different images as per instruction given by assessor.		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
1.	Select the required tool and apply on image			
2.	Create layers and open image or draw object or image on layer.			
3.	Select all objects on a specific layer and also move object from one layer to another layer and also copy past the object on different layer			
4.	Lock or unlock the object or layers. And also merge the layers			
5.	Draw different shapes as required			
6.	Reshape the objects			
7.	Align the objects as required			
8.	Transform the objects as required			
9.	Design the Shapes as required			
10.	Save the Shapes or objects in jpg, png etc. format.			
11.	Check leads and cable for any visual damage before use			
12.	Express your own opinions			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Knowledge Assessment

Title of Qualification: National Certificate of level 3 in Computer Aided Design & Manufacturing (CAD Operator)	CS Code:	Level: 3	Version: 01
Competency Standard Title: Manipulate Images in Adobe Photoshop Maintain Safety at Workplace Work in a Team Environment	Assessment Date (DD/MM/YY): Assessment Time: 30 min		

Guidance for Candidate	To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.
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Candidate Details	Name:..... Registration/Roll Number: Candidate Signature:.....
Written Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: Assessor's code: Signature of the Assessor:

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)	
1. What are any four shortcut keys in Photoshop?	
2. What is F7 in Photoshop?	
3. What is Ctrl+J in Photoshop?	

