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National Competency Standards

For

Gemstone Carver

Introduction

The National Competency Standards are written specifications of skill and knowledge competencies required in a particular trade. The competency standards are developed in collaboration with United Nations Industrial Development Organization (UNIDO), GIZ and National Vocational & Technical Training Commission (NAVTTC).

Industry experts from the relevant industries from different geographical locations across Pakistan were consulted during the development process of these competency standards to ensure input and ownership of all the stakeholders. NAVTTC approves these competency standards on the recommendation of Industry Advisory Group (IAG) for the Gemstone & Jewelry Sector.

The National Competency Standards could be used as a referral document for the development of curricula to be used by training institutions.

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STRUCTURE OF COMPETENCY STANDARDS

Competency Standards are performance specifications that identify the knowledge and competencies an individual needs to succeed in the workplace. A competency standard has the following elements:

Competency Unit

A competency unit is a statement which points to an outcome that employers will value and is observable and assessable. The competency unit is derived during the process of Occupational Analysis and is called 'Task Statement' in a DACUM Chart.

Overview

An overview is a description of the competency standard. It briefly describes the purpose and linkage of the competency unit with a job role.

Performance Criteria

Performance criteria statements set the standard of performance of a task in a job role. It describes 'how well' a task or competency unit is to be performed. It should be observable and written in a measurable term. It is one of the basic criterions for conducting assessment of the performance of a tradesman.

Knowledge and Understanding

Supporting knowledge and understanding statements include the essential knowledge and understanding, covering facts, principles, procedures, processes and methods. These statements cover the basic knowledge and understanding that is required to master a competency unit in an occupation.

Tools & Equipment

All the related tools, equipment and machinery that are required to perform a particular competency unit or task are listed under this heading.

COMPETENCY MAP

A. Perform Designing

A1 Take	A2 Prepare design	A3 Prepare
Customer	manually	computerized
Demand		designs

B. Perform Stone Cutting

B1. Trace	B2. Perform Slab	B3. Perform		
design on	saw Cutting	Trim saw		
stone				

C. Perform Grinding on Stone

grinding through grinding features sanding wheel	Perform grinding		Enhance design features	Perform sanding	Apply Polishing	
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D. Perform Marketing Activities

D1 Package the	D2 Determine	D3 Perform	D4 Arrange	
product	pricing	advertisement	distribution of	
			products	

E. Communicate with Others

E1 Build	E2 Supervise	E3 Follow	E4 Establish	
relations with	workers	instructions	linkage with	
customers		from seniors	suppliers	

1. UNIT TITLE: PERFORM DESIGNING

Competency Unit	Overview	Performance Criteria	Knowledge & Understanding	Tools & Equipment
A1.Take	This competency	You must be able to:	You must know and	1.Sketches
Customer	unit is related with	P1. Show different samples to the	understand: K1. Product line and	2.Pen
Demand	taking demand of	customer.	material.	3.Papers
	the customer.	P2. Orient customer about product	K2.Basic writing skills.	4.Samples
		line.	K3.Types and characteristics	5.Catalogues
		P3. Interpret procedures and	of different stones.	
		processes involved in manufacturing.		
		P4. Note down requirement of		
		customer.		
		P5. Report order to manufacturing		
		unit/ experts.		
A2.Prepare	This competences	You must be able to:	You must know and	1.Pencil
Design Manually	unit is about	P1. Prepare sketch of product as per	understand: K1. Sketching and drawing.	2.Rubber
	preparing design	customer's specification.	K2. Feasibility of design.	3.Triplets
	for gemstone	P2. Ensure accuracy of size and	, ,	4.Scale
	products.	quantity in design.		5.Vernier Calipers
		P3. Balance the design elements.		6.Tracing Paper
		P4. Prepare design in presentable		

		form.		
A3.Prepare	This competences	You must be able to:	You must know and	1.Computer
Computerized	unit is about	P1. Print design in printable form.	understand: K1.Basic knowledge of	2.Printer
Designs	preparing design	P2. Ensure accuracy of size of design	computer operations.	3.Jewel CAD
	for gemstone	as per product specification.	K2.Use of Jewel CAD and	4.Auto CAD
	products using	P3. Interpret design elements as per	Auto CAD.	
	computer	customer specification.	K3.Internetbrowsing.	
	applications.	P4. Balance the components of		
		design.		

2. UNIT TITLE: PERFORM STONE CUTTING

Title	Overview	Performance Criteria	Knowledge & Understanding	Tools & Equipment
B1 Trace	This competency	You must be able to:	You must know and	1.waterproof pen
Design On	unit is about	P1. Create surface for tracing the design.	understand: K1. Shapes of stones.	2.vicks pencil
Stone	tracing the design	P2. Translate design on surface of the stone as	K2.Measuring standards.	3.scale
	on surface of the	per specifications.		4.scissors
	stone.	P3. Select stone size as per requirement of the		5.paper cutter
		design.		

B2 Perform	This competency	You must be able to:	You must know and	1.Slabsaw
Slab Saw Cutting	unit deals with cutting gemstones	P1. Select raw stone as per specifications. P2. Place the stone in Slabsaw machine as per	understand: K1. Hardness and softness of	2.Cutting diamond blade
	using slabsaw machine.	procedure. P3. Ensure supply of water for cutting of the stone. P4. Adjust RPM of the machine as per hardness or softness of the stone. P5. Ensure the cutting of the stone is accurate and as per requirement. P6. Ensure the stone is solid and has no cleavage. P7. Apply occupational health and safety precautions.	the stone. K2.Adjustment of RPM of Slabsaw cutting machine. K3. Safety precautions.	
B3 Perform Trim Saw	This competency unit deals with cutting of gemstone using trimsaw machine.	You must be able to: P1. Follow the sketch/ design as per customer's requirement. P2. Ensure water supply for cutting process. P3. Hold the stone firmly so that blades of the machine cannot be damaged. P4. Cut stones as per size. P5. Ensure the depth of the cutting is as per specifications.	You must know and understand: K1.Operate Trimsaw machine. K2.Procedure of changing blades of Trimsaw machine.	1.Trimsaw cutting machine 2.Diamond blade 3.Screwdrivers 4.Safety gloves 5.Waterproof sheet 6.Safety goggles

P6. Wear safety goggles and waterproof	
sheet.	

3. UNIT TITLE: PERFORM GRINDING ON STONE

Competency Unit	Overview	Performance Criteria	Knowledge & Understanding	Tools & Equipment
C1. Perform Grinding	This competency unit is about grinding of stones to give shape to stones.	You must be able to: P1.Select relevant sharp grinding wheel as per requirement of the design. P2. Adjust the grinding wheel with the grinder so that it should be balanced. P3. Ensure availability of water supply for smooth working of the grinding operations. P4. Perform grinding of stone as per design. P5. Ensure edges of the stone as smooth and accurate to the design. P6. Wear waterproof safety cloths to avoid dust and waste water.	You must know and understand: K1. Procedure of fixing the grinding wheel with the grinder. K2. Operate grinder machine as per procedure. K3. Different types of grinding wheels and their characteristics. K4. Grinding technique. K5. Safety precautions.	1.Lamp 2.Grinding machine/diamond wheel 3.Safety goggles 4.Safety cap 5.Waterproof sheet 6.Water supply system
C2. Apply design on stone	This competency unit deals in application of design on the	You must be able to: P1. Trace the design on stone as per customer specifications. P2. Select diamond tools related to work	You must know and understand: K1.Operate carving machine. K2.Procedure of tool mantling. K3. Properties (hardness scale)	1.Carving machine 2.Diamond tools 3.Diamond disk 4.Diamond bits

	surface of stones.	specifications.	of stones.	5.Course drill	of
		P3. Apply design using carving machine on		different number	·s
		stone as per customer specifications.			
		P4. Ensure the components of the design			
		applied on stone are balanced.			
		P5. Create depth in design to ensure 3D			
		effect.			
		P6. Wear waterproof safety clot			
		P7. Adjust RPM of carving machine as per			
		hardness or softness of the stone.			
		P8. Select right gem face for application of the			
		design.			
C3. Perform	This competency	You must be able to:	You must know and	1.Sand papers	
sanding	unit covers the	P1. Select sand paper as per work	understand: K1. Types and characteristics	2.Flexible	
	techniques used in	specifications.	of sand papers.	shaft machine	
	sanding the stone	P2. Apply sand paper so that the surface of	K2.Stone properties(hardness	3.Water	
	to make it smooth	the stone is smooth.	scale)	supply system	
	for polishing.	P3. Ensure availability of water supply for	K3. Manual sanding technique.	4.Safety goggles	
		smooth working of the grinding operations.	K4. Operate flexible shaft	5.Safety mask	
		P4. Ensure the surface of the curves, sharp	machine for sanding purposes.		
		edges, and depth is smooth.	The same of the sa		
		P5. Wear safety goggles and mask for work.			

C4. Enhance	This competency	You must be able to:	You must know and	1.Vernier Caliper
design	unit is about	P1. Ensure features of the design are	understand: K1. Techniques:	2.Scale
features.	enhancing the	enhanced as per work specifications.	In-lay carving	3.Geometrical tools
	design features	P2. Make design features prominent and	Intaglo carving	4.Flexible
	using different	accurate.	Chemose carving	shaft machine
	techniques.	P3. Operate tools and equipment as per	K2.Stone properties(hardness	5.Diamond bits
		procedure.	scale)	6.Diamond tools
		P4. Follow safety precautions during work.	K3. Measuring standards and	7.Water
			procedures	supply system
			K4. Use of Vernier Caliper	8.Sand papers
			K5. Safety precautions	
C5. Apply	This competency	You must be able to:	You must know and	1.Polishing machine
Polishing	unit deals in	P1. Select stone polish as per hardness and	understand: K1. Different types of polish.	2.Different types of
	application of	softness of the stone.	K2.Stone properties(hardness	polishing wheels
	polish on stones	P2. Adjust speed of the polishing machine as	scale)	3.Different types of
	keeping in view the	per stone hardness.	K3. Buffing technique	buffs
	hardness of the	P3. Apply water/oil/diamond powder/luster	K4. Procedure of operating	4.Dop stick
	stones.	on gemstone as per specification.	polishing machine.	
		P4. Ensure polish is applied on all edges, and		
		curves.		
		P5. Follow safety precautions and wear safety		
		cloths.		

P6. Operate polishing machine as per	
procedure.	

4. UNIT TITLE: PERFORM MARKETING ACTIVITIES

Title	Overview	Performance Criteria	Knowledge & Understanding	Tools & Equipment
D1 Package the Product	This unit of competency is designed to pack the product in a presentable manner that it should be labeled and safety is ensured.	You must be able to: P1. Determine packaging requirement as per product need. P2. Ensure safety of product in packaging. P3. Design packaging material as per products specification.	You must know and understand: K1. Packing according to international standards. K2. Labeling the product according to SOPs. K3. Designing packaging material. K4. Benefits of packaging.1.	1.Packing material2.Labeling standards3.Labeling tags4. Labeling machine.5.Packing machine
D2 Determine Pricing	This unit of competency is design in order to decide the price according to costing and market	You must be able to: P1. Evaluate the price as per costing. P2. Perform correct calculations of price. P3. Determine a price which is appealing for customers. P4. Assess 4Cs of the gems correctly	You must know and understand: K1. Marketing skills. K2. Price fluctuation in market. K3. Determining value. K4. Internet and social media knowledge.	1. Internet/ social media. 2.Invoice 3.Calculator. 4.Computer 5.Printer

D3 Perform Advertisement	This unit of competency is performed in order to introduce the product in market.	You must be able to: P1. Selected effective media for promotion of the product. P2. Target relevant group of customers with promotion campaign. P3. Conduct promotion of products through sharing product samples. P4. Ascertain the need of potential market for products.	You must know and understand: K1. Advertisement cost. K2. Advertisement standards. K3. Marketing techniques. K4. Proper update information of products.	1.Laptop/computers 2.Website/ internet
D4 Arrange Distribution of Products	This unit of competency is about distribution of products to different retailers and customers.	You must be able to: P1. Arrange economical and effective distribution line for the product. P2. Set distribution targets for the products. P3. Maintain distribution/sales record of different products. P4. Maintain record of retailers and customers.	You must know and understand: K1. Channels of distribution. K2. Distribution of products.	1.Register 2.Pen 3.vehicles

5. UNIT TITLE: COMMUNICATE WITH OTHERS

Competency	Overview	Performance Criteria	Knowledge &	Tools & Equipment
F1. Build relations with customers	This unit of competency is designed to build good and permanent relationship with customers.	You must be able to: P1. Offer after sales services. P2. Update customers with new products. P3. Kind and honest with customers. P4. Be polite with customers in dealing.	You must know and understand: K1. Maintaining data of related customers. K2. 4Ps and 4Cs of customers.	1.Database of customers 2.Mobile 3.Computer 4.Reference 5.Chambers
F2. Supervise	This unit of	P5. Keep record of customers. P6. Share details of new products with customers. You must be able to:	You must know and	1.Notice board
workers	competency is designed to manage the workers and other personnel that can help in improving work quality and quantity.	You must be able to: P1. Perform the duty with other team members. P2. Supervise the work and achieve targets in minimum time. P3. Give clear direction to workers. P4. Check efficiency of workers/ team	understand: K1. Assigned task K2. Management skills K3. Leadership qualities K4. Being team leader	2.Schedule 3.Web portal

F3. Follow instructions from seniors	This unit of competency deals with following instructions of the seniors to perform proper job.	members. P5. Motivate the workers in order to enhance the efficiency of workers. P6. Make work environment comfortable for workers. P7. Evaluate workers on the basis of performance. You must be able to: P1. Seek guidance from seniors. P2. Follow the instructions from seniors. P3. Consult seniors in case of emergency.	You must know and understand: K1. Knowledge of seniors to enhance the efficiency of products. K2. Senior suggestions and instructions.	 Telephone Computer Internet Work specifications
F4. Establish linkage with suppliers.	This unit of competency is to develop good	You must be able to: P1. Keep good relationships in order to supply material in time.	You must know and understand: K1. Supply chain	1.Record register 2.Pen
F. F	relationships and linkage with raw material suppliers.	P2. Maintain record of the suppliers. P3. Identify relevant suppliers.	management. K2. Maintaining record of suppliers.	