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National Competency Standards

For

SOMUK

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 (NAVTTTC).

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. NAVTTTC 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 criteria 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. Provide Material

A1 Purchase the required material	A2 Melt and mix the different type material as per of required specification	A3 Draw of Tar (Wire)	A4 Stretch Patra (Sheet)		
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B. Identify the type of Jewelry

B1 Make Necklace design	B2 Make Bangles design	B3 Make Ear Piece design	B4 Make Finger Ring design		
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C. Perform Cutting

C1: Draw the Design on pattern	C2: Cur pattern as per design	C3. Cut Patra (sheets) as per design				
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D. Apply Somuk Work

D1: Collect Required Material	D2: Make Different Design with Wire	D3: Apply wire Design on Sheet	D4: Perform Soldering		
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E. Apply Finishing and Polishing

E1: Perform Finishing on sides, Back and Stone Seat	E2: Apply Polishing	E3: Apply Stone Fitting		
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F. Observe all the Health & Safety Measures

F1: Ensure Proper Work Bench	F2: Ensure general workplace safety	F3: Apply personal safety	F4: Safe handle of Wastage		
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1. Unit Title: Provide Material

Competency Unit	Overview	Performance Criteria	Knowledge & Understanding	Tools and Equipment
A1 Purchase the required material	This unit of competency is performed to compare the gold with alloyed gold, precious and semiprecious metal.	<p><i>You must be able to:</i></p> <p>P1. Identify the types of metals as per specification.</p> <p>P2. Identify the characteristics and properties of metals.</p> <p>P3. Identify the colours shades of metal.</p> <p>P4. Ensure the measurement, sizes, and gauges as per SOPs.</p> <p>P5. Ensure personal safety as per requirement of work. (Acid handling and fire guns)</p>	<p><i>You must know and understand:</i></p> <p>K1.Basic Knowledge of precious and industrial metals.</p> <p>K2.Use of tools/ equipments.</p> <p>K3. Types characteristics, properties of metals.</p> <p>K4. Metering system.</p> <p>K5. Safety precautions.</p>	<ol style="list-style-type: none"> 1. Lab test 2. Measuring tools
A2.Melt and mix the different type material as per of required specification	This unit of competency is performed to make alloy of precious and industrial metals by melting and strengthen the required metals.	<p><i>You must be able to:</i></p> <p>P1. Perform measuring the metals according to SOPs.</p> <p>P2. Perform melting according requirement of work.</p> <p>P3. Identify the material.</p> <p>P4. Pouring of metal according to requirement.</p> <p>P5. Ensure personal safety as per requirement of work.</p> <p>P6. Wear safety gloves as per requirement.</p> <p>P7. Operate melting equipment.</p> <p>P8. Maintain working environment.</p>	<p><i>You must know and understand:</i></p> <p>K1. Melting characteristics of metals.</p> <p>K2. Metal behaviour on melting.</p> <p>K3. Metal behaviour on cooling.</p> <p>K4. Safety precautions.</p> <p>K5. Understanding of impurity.</p>	<ol style="list-style-type: none"> 1. Fire proof gloves. 2. Fire fighting equipment. 3. First aid box. 4. Face Mask. 5. Goggles 6. Crucible 7. Crucible catcher (tong) 8. LPG cylinder. 9. Furnace

A3. Draw Tar (wire)	This unit of competency is performed to prepare wire according to specification.	<p>You must be able to:</p> <p>P1. Make bar (<i>reiny</i>) according to SOPs. P2. Operate jewellery rolling machine. P3. Ensure annealing process. P4. Ensure the bar size. P5. Perform on draw plate (<i>jantri</i>). P6. Ensure the wire size and gauge. P7. Ensure personal safety as per requirement of work.</p>	<p>You must know and understand:</p> <p>K1. Use of machine and equipment. K2. Basic knowledge of gauges. K3. Knowledge of annealing and hardening process.</p>	<ol style="list-style-type: none"> 1. Rolling machine 2. Draw plate (<i>jantri</i>) 3. Wire puller (<i>jamor</i>) 4. Lubricating Oil (Vegetable Oil) 5. Gold smith Hammer 6. Gold smith Envial.
A4. Draw Patra (Sheet)	This unit of competency is performed to prepare patra (sheet) according to specification.	<p>You must be able to:</p> <p>P1. Make bar (<i>reiny</i>) according to SOPs. P2. Operate gold smith cold rolling machine. P3. Ensure annealing process. P4. Ensure the bar size. P5. Ensure the patra size and gauge. P6. Ensure the patra weight. P7. Ensure personal safety as per requirement of work.</p>	<p>You must know and understand:</p> <p>K1. Use of machine and equipment. K2. Basic knowledge of gauges. K3. Knowledge of annealing and hardening process.</p>	<ol style="list-style-type: none"> 1. Rolling machine 2. Lubricating Oil (Vegetable Oil) 3. Gold smith Hammer 4. Gold smith Envial. 5. Leather roll.

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2. Duty: Prepare jewellery designs

Title	Overview	Performance Criteria	Underpinning Knowledge and Skills	Tools and Equipment
B1. Make Necklace Design	This unit of competency is performed in order to make the necklace design according to the customer specification.	<i>You must be able to:</i> P1. Identify the necklace design. P2. Modify design according to requirement. P3. Perform measurements as per requirements. P4. Ensure the design is balanced and as per customer specification.	<i>You must know and understand:</i> K1. Understanding of design. K2. Knowledge of measurements.	<ol style="list-style-type: none"> 1. Design books 2. Scale 3. Geometry box 4. Drawing paper 5. Internet designs.
B2. Make Bangles Design	This unit of competency is performed in order to make the bangles design according to the customer specification.	<i>You must be able to:</i> P1. Identify the bangles design. P2. Modify design according to requirement. P3. Perform measurements as per requirements.	<i>You must know and understand:</i> K1. Understanding of design. K2. Knowledge of measurements.	<ol style="list-style-type: none"> 1. Design books 2. Scale 3. Geometry box 4. Bangles size gauge (ring) 5. Drawing paper
B3. Make Ear piece Design	This unit of competency is performed in order to make the ear piece design according to the customer specification.	<i>You must be able to:</i> P1. Identify the ear piece design. P2. Modify design according to requirement. P3. Perform measurements as per requirements.	<i>You must know and understand:</i> K1. Understanding of design. K2. Knowledge of measurements.	<ol style="list-style-type: none"> 1. Design books 2. Scale 3. Geometry box 4. Drawing paper
B4. Make Finger ring Design	This unit of competency is performed in order to make the finger ring design according to the customer specification.	<i>You must be able to:</i> P1. Identify the finger ring design. P2. Modify design according to requirement. P3. Perform measurements as per requirements.	<i>You must know and understand:</i> K1. Understanding of design. K2. Knowledge of measurements.	<ol style="list-style-type: none"> 1. Design books 2. Scale 3. Geometry box 4. Drawing paper

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3. Duty: Perform Cutting

Title	Overview	Performance Criteria	Underpinning Knowledge and Skills	Tools and Equipment
C1. Draw the pattern as per design	This unit of competency is performed in order to make the pattern according to the design and specification.	<p><i>You must be able to:</i></p> <p>P1. Perform design on butterfly paper. P2. Perform line work. P3. Ensure measurement according to specific design.</p>	<p><i>You must know and understand:</i></p> <p>K1. Understanding of basic lines. K2. Design knowledge.</p>	<ol style="list-style-type: none"> 1. Geometry box 2. Drawing paper 3. Scale 4. Design book
C2. Cut pattern as per design	This unit of competency is performed in order to cut the pattern according to the design and specification.	<p><i>You must be able to:</i></p> <p>P1. Perform cutting of drawing paper. P2. Ensure the measurement according to design and specification. P3. Ensure personal safety as per requirement of work.</p>	<p><i>You must know and understand:</i></p> <p>K1. Use of cutting tools. K2. Design knowledge. K3. Understanding of measurement.</p>	<ol style="list-style-type: none"> 1. Scissors 2. Cutting blade
C3. Cut sheet as per design	This unit of competency is performed in order to cut the sheet (<i>patra</i>) according to pattern.	<p><i>You must be able to:</i></p> <p>P1. Ensure pasting of pattern on sheet. P2. Ensure design accuracy. P3. Perform marking. P4. Perform engraving. P5. Perform drilling. P6. Perform cutting.</p>	<p><i>You must know and understand:</i></p> <p>K1. Understanding of engraving. K2. Design knowledge. K3. Use of saw tools. K4. Use of hand tools</p>	<ol style="list-style-type: none"> 1. Saw 2. Gum for pasting 3. Table Lamp 4. Cutter 5. Drill machine

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4. Duty: Apply Somuk Work.

Title	Overview	Performance Criteria	Underpinning Knowledge and Skills	Tools and Equipment
D1. Collect required Material	This unit of competency is performed in order to collect the appropriate material as per design, specification and requirement of the product.	You must be able to: P1. Ensure the weight of material as per specification. P2. Measure the size of the wire and sheet. P3. Ensure quantity of obtain material with the relevant design. P4. Perform arrangement according to design (if in pieces) P5. Ensure that the material availability during work. P6. Ensure minimum wastage.	You must know and understand: K1. Use of advanced measuring equipment. K2. Material handling techniques.	<ol style="list-style-type: none"> 1. Beam balance 2. Electronic balance 3. Wire and sheet gauge 4. Pliers 5. Tweezers.
D2. Make different designs with wire	This unit of competency is performed in order to make wire design products.	You must be able to: P1. Ensure that the wires is twist according to specifications P2. Perform design arrangements according to requirements. P3. Perform geometrical shapes.	You must know and understand: K1. Knowledge of measuring, joining and designing patterns of wires. K2. Interpret the overall layout of designs.	<ol style="list-style-type: none"> 1. Set of Tweezers (size range: 6-8 inches) 2. Pliers 3. Needles (20, 22, 24) 4. Hand drill machines. 5. Goldsmith hammers. 6. Shier
D3. Apply wire design on sheets	This unit of competency is performed in order to make a blend of wire and sheet design products as	You must be able to: P1. Perform measurements as per design on the frame to apply wires on sheets. P2. Ensure arrangements of wire design on	You must know and understand: K1. Knowledge of measuring, joining and	<ol style="list-style-type: none"> 1. Tweezers 2. Shier

	per the specifications	sheet as according to design.	designing patterns of wires. K2. Interpret the overall layout of designs.	
D4. Perform Soldering	This unit of competency is performed in order to solder the designs on the sheet to make it into a single unit according to the design.	You must be able to: P1. Perform soldering gun as SOPs. P2. Ensure personal safety as per requirement of work. P3. Ensure the safe usage of tools.	You must know and understand: K1. Different types of soldering guns. K2. Use the soldering gun. K3. Use of firefighting equipment. K4. Knowledge of fire pressure.	<ol style="list-style-type: none"> 1. Different sizes of soldering guns. 2. Igniter 3. Required gases cylinder. 4. Fire proof sheet. 5. Safety Goggles. 6. Safety apron and gloves.

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5. Duty: Apply Finishing and Polishing.

Title	Overview	Performance Criteria	Underpinning Knowledge and Skills	Tools and Equipment
E1. Perform finishing on sides, back and stone seats.	This unit of competency is performed for cleaning according to design and color and preparing it for next process.	<i>You must be able to:</i> P1. Ensure soldering is visible or not P2. Ensure product color as per requirement. P3. Remove dirt and dust. P4. Make sure that product sides have been equally polished. P5. Ensure acid cleaning. P6. Ensure personal safety as per requirement of work.	<i>You must know and understand:</i> K1. Knowledge of acid properties. K2. Knowledge of cleaning techniques.	<ol style="list-style-type: none"> 1. Cleaning brush (Brows wire) 2. Sulphuric Acid 3. Gloves 4. Goggles
E2. Apply Polishing	This unit of competency is performed to polish the product for glowing.	<i>You must be able to:</i> P1. Ensure that the soldering is not being visible. P2. Ensure the product color according to specification. P3. Remove dust and dirt from metals.	<i>You must know and understand:</i> K1. Knowledge of polishing. K2. Understanding of buffing. K3. Understanding cleaning process with chemicals.	<ol style="list-style-type: none"> 1. Buff 2. Lester (white, black and brown) 3. Shinning Lester 4. Buff machine 5. Drum machine 6. Brush machine 7. Cleaning water.

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6. Duty: Observe all the Health & Safety Measure.

Title	Overview	Performance Criteria	Underpinning Knowledge and Skills	Tools and Equipment
F1. Ensure proper work bench	This unit of competency is performed to ensure proper working environment with comfort	<i>You must be able to:</i> P1. Arrange tools as per standard operating procedure (SOP) P2. Store precious metals in special made lockers to keep material safe P3. Work with hand tools as per standard operating procedure (SOP) P4 Follow personal safety precautions as per requirement of work	<i>You must know and understand:</i> K1. Basic knowledge of hand tools. K2. Use of tool/ equipment K3. Types of work bench	1. Goldsmith hand tool kit 2. Gloves 3. Goggles. 4. Gas Masks. 5. Fire safety equipment
F2. Ensure general workplace safety	This unit of competency is performed to ensure general safety at workplace	<i>You must be able to:</i> P1. Wear safety gloves as per requirements. P2. Wear safety goggles as per requirement P3. Perform safety steps during work as per standard operating procedure (SOP) P4. Follow personal safety precautions as per requirement of work	<i>You must know and understand:</i> K1. Procedures of using first aid kit K2. Use of fire fighting equipment K3. Safety precautions.	1. Gloves 2. Goggles 3. Masks 4. Fire safety equipment
F3. Apply personal safety	This unit of competency is performed in order to keep yourself safe from any possible hazards	<i>You must be able to:</i> P1. Ensure the safe usage of potentially dangerous substances (HCL, HNO ₃ , H ₂ SO ₄ , Natural gas) in a controlled environment. P2. Ensure safety measures before using any sharp apparatus according to SOPs. P3. Usage of proper tools/chemicals. P4. Ensure acid handling with immense care (use of gloves and goggles)	<i>You must know and understand:</i> K1. Understanding of acid usage. K2. Use of tools and equipments.	1. Safety Goggles. 2. Gloves (when using acid) 3. Mask (to minimize exposure to gasses when treating gold with chemicals)
F4. Secure	This unit of competency	<i>You must be able to:</i>	<i>You must know and</i>	1. Crucible

handle the wastage	is performed to dispose off the wastage for recycling and minimizes the environmental hazard.	P1. Ensure precious metals recovered. P2. Used chemical disposed off safely. P3. Wear safety gloves as per requirements. P4. Wear safety goggles as per requirement P5. Perform safety steps during work as per standard operating procedure (SOP) P6. Follow personal safety precautions as per requirement of work	<i>understand:</i> K1. Procedure for recovery of precious metals K2. Chemical properties and characteristics of metals K3. Safety precautions	2. Killen 3. Acid resistant cover bowls. 4. Refractometer 5. Gloves 5. Goggles 6. Masks 7. Fire safety equipment
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