



**National Competency Standards for
“Technician for Mining Process Technology” Level-2**



**National Vocational and Technical Training Commission (NAVTTTC)
Government of Pakistan**



ACKNOWLEDGEMENT

National Vocational and Technical Training Commission (NAVTTTC) extends its gratitude and appreciation to representatives of business, industry, academia, government agencies, provincial TEVTAs, sector skill councils and trade associations who spared time and extended their expertise for the development of National Vocational Qualifications for the trade of **Mining Process Technology**. This work would not have been possible without the technical support of the above personnel.

NAVTTTC initiated development of CBT&A based qualifications for 200 traditional / hi-tech trades under the Prime **Minister’s Hunarmand Pakistan Program**, focusing on Development & Standardization of 200 Technical & Vocational Education & Training (TVET) Qualifications.

NAVTTTC efforts have received full support from the Ministry of Federal Education and Professional Training, which highly facilitated progress under this initiative.

It may not be out of place to mention here that all the experts of Industry, Academia, VET TEVTAs, BTEs and PVTC work diligently for making this qualification worthy and error free for which all credit goes to them. However, NAVTTTC accepts the responsibility of all the errors and omissions still prevailing in the qualification document.

Development of Skill Standards is a dynamic and ongoing process, and the developed skill standards need periodic review and updating owing to the constant technological advancements, development in scientific knowledge, and growing experience of implementation at the grass root level as well as the demand of industry. NAVTTTC will ensure to keep the qualifications abreast with the changing demands of both national and international job markets.

**Executive Director,
NAVTTTC**



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Introduction

Mining technology is extraction of valuable minerals ores like Manganese, tantalum, cassiterite, copper, tin, nickel, bauxite, iron, gold, silver, and diamonds or other geological materials from the surface or under the earth. Usually these ore bodies in the form of lode, vein, seam, reef, or placer deposit. In other words, industrial activity removes rock from the Earth's crust and processes it to remove valuable minerals for us to use. This technology in a wider sense also includes extraction of any non-renewable resource such as petroleum, natural gas, or even water.

Primarily, there are two types of mining methods being used for the extraction of minerals and ores; surface/opencast mining and underground mining. The choice of method is largely determined by factors such as depth, geology of the mineral deposit and the cost of equipment when evaluating mineral deposits, it is extremely important to keep profit in mind. The total quantity of mineral in a given deposit is referred to as the mineral inventory, but only that quantity which can be mined at a profit is termed ore reserves.

The overall sequence of activities in modern mining is often compared with the five stages in the life of a mine: prospecting, exploration, development, exploitation, and reclamation. In the first Prospecting stage; geophysical, geochemical procedures, Location of favorable loci (maps, literature, and old mines), Air source/aerial photography, airborne geophysics, satellite, Surface/ ground geophysics, geology and Spot anomaly is evaluated. Exploration (Ore body); Sample (drilling or excavation), assay, testing analysis, Estimation tonnage and grade, value deposit: present value, income cost, Feasibility study: make decision to abandon or develop. Development (Prospect); Acquire mining rights (purchase or lease), File environmental impact statement, technology, assessment, permit, Construct access roads, transport system, locate surface plant, construct facilities, excavate deposit (strip or sink shaft). Exploitation (Mine); Factors in choice of methods like geologic, geographic, economic, environmental, societal safety, Types of mining methods. Surface: open pit, open cast, etc. Underground: room and pillar, block caving, etc. Monitor costs and economic payback. Reclamation (Real estate); Removal of plant and buildings.



Reclamation of waste and tailings dumps, Monitoring of discharges.

In the extraction/mining stage of mineral deposits, blasting plays the most critical role and involves high-risk activities. It plays a central role in fragmenting rock and making mineral extraction possible and efficient. A well-executed blast ensures safety, optimizes productivity, and reduces environmental impact. For this reason, it is essential that technicians understand the principles of explosive materials, handling procedures, blast design, and post-blast inspections. These competencies form the foundation for safe and effective operations at any mining site.

Being cognizant of this fact, National Vocational & Technical Training Commission (NAVTTTC) developed competency standards for Mining and mineral technology training under National Vocational Qualifications Framework (NVQF). These competency standards have been developed by a Qualifications Development Committee (QDC) and validated by the Qualifications Validation Committee (QVC) having representation from the leading development in mining area of the country.

Purpose of the Qualification

The competency based NVQ has been developed to train the unskilled men and women of Pakistan on the technical and entrepreneurial skills to be employed / self-employed and inevitably set sustainable impact on their lives by enhancing their livelihood income.

The purpose of these qualifications is to set professional standards for upcoming experts, who will serve as key elements enhancing quality of Pakistan’s manufacturing sector. The specific objectives of developing these qualifications are as under:

- Develop essential technical skills required for core mining operations.
- Ensure safety compliance through proper knowledge of site safety protocols.
- Gain competence in blasting and drilling techniques critical for mining efficiency.
- Learn to operate and manage conveyors, a key aspect of material handling in mines.
- Enhance communication skills for effective team coordination and reporting.
- Build proficiency in basic computer and 2D drawing tools for mining-related documentation and planning.



- Understand and apply inventory management practices for mine materials and equipment.
- Prepare for entry-level technician roles in the mining and mineral sector.
- Improve decision-making by integrating technical, digital, and practical knowledge.
- Lay a strong foundation for further specialization or supervisory roles in the mining industry.

Date of Validation

The level 3 Mining Process Technology qualification has been validated on 04 Oct to 08 Oct, 2021 at PITAC, Lahore, by the qualification validation committee (QVC) members and will remain in currency until 10th October 2031

Date of Review

This national vocational qualification (NVQ) has been reviewed by the Qualifications Review Committee (QRC) on 30th June to 3rd July 2025 at NUTECH, Islamabad.

The qualification shall be reviewed after 3 years.

Codes of Qualifications

Qualification Title	Code
National Vocational Certificate Level 3 in Mining Process Technology “ Technician ”	724MP13

Members of Qualification Development Committee

The following members participated in the qualification development process at PITAC, Lahore.

Date: 13 to 17 August 2021

S#	Name	Designation
1.	Dr. Shahid Tufail Sheikh	Member Science, Ex-Head of MPRC Lahore
2.	Dr. Farhat Yasmeen	Professor, UET Lahore
3.	Dr. Muhammad Naeem Khan	AP, Govt Science College Wahdat Road,



		Lahore
4.	Dr. Irfan Hafeez	Senior Scientific Officer, PCSIR Lahore
5.	Dr. Asma Sheikh	Scientific Officer, PCSIR Lahore
6.	Dr. Shafia Iftikhar	AP, University of Sahiwal
7.	Muhammad Irfan Zubair	Deputy Director GSP, Lahore
8.	Shahbaz Muhammad	Assistant geophysicist GSP, Lahore
9.	Hafiz Zeeshan Akram	Assistant Director GSP, Lahore
10.	Muhammad Shahzad	Director, NAVTTC, Islamabad
11.	Engr. Saba Sadiq	DACUM FACILITATOR, Islamabad

Members of Qualification Validation Committee

The following members participated in the qualification development process at PITAC, Lahore. **Date: Oct 4th 2021 to Oct 8th 2021**

S#	Name	Designation
1.	Aftab Hussain	DACUM Facilitator/ Principal P-TEVTA Rawalpindi
2.	Dr. Shahid Tufail Sheikh	Member Science, Ex-Head of MPRC Lahore
3.	Dr. Farhat Yasmeen	Professor, UET Lahore
4.	Dr. Muhammad Naeem Khan	AP, Govt Science College Wahdat Road, Lahore
5.	Dr. Irfan Hafeez	Senior Scientific Officer, PCSIR Lahore
6.	Engr. Shafaat Ali	Lecturer (Mining) GCT KharBajaur
7.	Engr. M. Muneeb ur Rehman Khan	Measurement Engineer, ACC PVT Ltd
8.	Zeeshan Musadiq	Data Engineer/Mudlogger (Geologist) Petro Services
9.	Tariq Mehmoob	Incharge Operational Wing PBTE, Lahore
10.	Mr. Tahir Shah	Assistant Secretary TTB Peshawar
11.	Syed Mansoor Ahmed	Assistant Manager IT, NVQF Registry Incharge, SBTE Sindh



Members of Qualification Review and Validation Committee

The following members participated in the qualification review and validation process at NUTECH, Islamabad. **Date: June 30th 2025 to July 3rd, 2025.**

S#	Name	Designation
1.	Mr. Samad Khan Kakar	Dir, DoE (NESPA)
2.	Mr. Hafeez Ullah	DD DoE (NESPA)
3.	Dr. Habib Ur Rehman Marwat	UET Peshawar
4.	Mr. Mobin-ul-Haq	Wah, Nobel
5.	Col ® Sherazi	Dir, OS Directorate, GHQ
6.	Col Saad Tajwar	OS, Directorate, GHQ
7.	Lt. Col Fahad	MI Dir, GHQ
8.	Maj. Tahir	CIEDO, HQ
9.	Maj. Omer	OS Directorate, GHQ
10.	Engr. Yasir Ghazi	KP-TEVTA
11.	Engr. Hamza Khan	FCCL, Wah
12.	Engr. Muhammad Yousuf	NUTECH

Entry Requirements

For National Vocational Certificate Level-3 in Mining Process Technology “Technician”, the entry requirement is **Level-2** in Mining Process Technology “Assistant Technician” in formal institute. The entry in the informal sector is not prescribed.



Regulation of the Qualification and schedule of units

Not applicable

Summary of Competency Standards

Sr.#	Competency Standards	NVQF Level	Category	Estimated Contact Hr.			Credit Hr.
				Th.	Pr.	Total	
Technician in Mining Process Technology -LEVEL 3							
1	Maintain Safety at Site	3	Generic	16	64	80	8
2	Perform Basic communication skills	3	Generic	8	32	40	4
3	Perform Core Drilling for Mining	3	Technical	20	80	100	10
4	Perform Blasting Operation	3	Technical	20	80	100	10
5	Perform Conveyor Operations	3	Technical	16	64	80	8
6	Perform Basic Computer Operations	3	Generic	12	48	60	6
7	Develop 2D drawings	3	Functional	16	64	80	8
8	Manage Inventory of Mine material	3	Technical	12	48	60	6
Total				120	480	600	60

Details of Competency Standards



724CO09A-Competency Standard: Maintain Safety at Site

Overview: This competency standard covers the skills and knowledge required to maintain safe work conditions at site, emergency response activity at mine site during both mining and blasting operations. Your underpinning knowledge will be sufficient to provide you with the basis for your work.

Competency Units	Performance Criteria
CU1. Follow Safety Protocols for Explosives Material at Site	You must be able to: P1. Identify Explosives used at the Site P2. Wear appropriate PPE for explosive handling. P3. Handle explosives gently.
CU2. Demonstrate Fire Fighting Exercise	You must be able to: P1. Follow emergency response procedures. P2. Identify Classes of Fire P3. Select types of Fire Extinguishers P4. Operate fire extinguishers and hoses safely
CU3. Perform Basic Electrical Work Safely at Workplace	You must be able to: P1. Identify electrical hazards at the worksite P2. Wear prescribed personal protective equipment correctly. P3. Isolate electrical supply before starting work P4. Follow standard procedures for cable handling. P5. Inspect electrical tools for safety compliance.
CU4. Carry Out First Aid Treatment (in Case of Emergency)	You must be able to: P1. Identify types of workplace injuries P2. Apply first aid techniques to stabilize the injured person P3. Control bleeding using appropriate first aid method P4. Perform basic life support (CPR, recovery position). P5. Record incident details accurately after treatment

Knowledge & Understanding:

The candidate must be able to demonstrate the underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes the knowledge of:



- Unsafe act and unsafe conditions
- Electrical safety
- First Aid treatment
- Source of fire
- Firefighting techniques
- Emergency exits at workplace
- Types of fire extinguisher
- Classes of fire
- Types of hazardous materials and relevant safety procedures
- Use of required PPE for different situations

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Prepare a list of PPEs
- Demonstrate the use of at least one of the PPEs
- Perform first aid treatment against electric shock/minor injury.
- Explain safety procedure at workplace
- Differentiate between safe and unsafe tools

Tool and Equipment:

- Steel-toed footwear
- Hard hat
- Safety gloves
- Appropriate safety glasses
- High visibility vest
- Hearing protection
- Breathing apparatus
- De-electric boots and gloves for protection from electrical shock
- Fall protection, and other applicable PPE
- Site emergency response plan
- Fire extinguishers



National Competency Standards for “Technician in Mining Process Technology”



- Fire blankets
- Respirators, masks
- Fire hoses
- First aid kits, stretchers
- Safety standard books



724CO09-B Competency Standard: Perform Basic Communication Skills

Overview: This unit covers the knowledge, skills and attitudes required to gather, interpret and convey information in response to workplace requirements. It also identifies role and responsibility as a member of a team. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Convey Workplace Information Effectively	<i>You must be able to:</i> P1. Use appropriate language for communication. P2. Follow standard reporting and documentation formats. P3. Report hazards, incidents, and daily tasks.
CU2. Participate in Workplace Meetings and Discussions	<i>You must be able to:</i> P1. Follow meeting protocols and procedures. P2. Understand tool box talk (TBT). P3. Share relevant ideas and feedback clearly. P4. Take notes and record key points.
CU3. Identify own role and responsibility within team	<i>You must be able to:</i> P1. Understand job duties and assigned tasks. P2. Follow given instructions P3. Coordinate with team members to meet goals
CU4. Support the Team members	<i>You must be able to:</i> P1. Assist team members in completing tasks. P2. Share required tools with the team members. P3. Communicate clearly and respectfully with team members

Knowledge & understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard.

This includes the knowledge of:

- Importance of effective communication



- Different mode of communication
- Types of non-verbal communication
- Mode of communication while operating machines
- Importance of creating cooperative work environment
- Role and objective of team.
- Different Sources of information
- Risk of failure in team work on the project.
- Importance of resolving the co-worker’s problems
- Plan work and organize required resources in coordination with team
- 7Cs of communications

Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Follow workplace safety signs and signals correctly.
- Wear proper personal protective equipment (PPE) at all times.
- Report unsafe conditions to the supervisor immediately.
- Participate in regular safety drills and briefings.
- Apply correct procedures during emergency situations.
- Inspect work area for potential hazards before starting tasks.
- Maintain clean and organized workspace to prevent accidents.
- Demonstrate safe manual handling techniques.

Tool and Equipment

- Note book
- Pen
- Pencil
- Communication gadgets



724MP13-C Perform Core Drilling for Mining

Overview: This unit covers the knowledge and skills required to perform core drilling for mining. You will be able to prepare a drilling site, move equipment and material to pattern and perform manual and rotary drilling. Your underpinning knowledge will be sufficient to provide you with the basis for your work.

Competency Unit	Performance Criteria
CU1. Prepare site for drilling	You must be able to: P1. Place indicators on drill pattern in preparation for hole drilling P2. Mark out drill pattern P3. Adjust drill within specified tolerances as per drill pattern P4. Protect pre-existing drill holes
CU2. Handle drilling equipment according to pattern	You must be able to: P1. Select correct drilling equipment as per pattern requirements. P2. Inspect drilling tools before operation for defects. P3. Position equipment accurately on the marked drilling points. P4. Operate drilling machine following standard operating procedures. P5. Apply safety measures throughout the drilling process.
CU3. Measure the mud parameters	You must be able to: P1. Identify the mud type P2. Measure the viscosity of given sample P3. Measure gel strength, then record pH of then given sample
CU4. Perform manual drilling	You must be able to: P1. Select the area for drilling P2. Mark drilling points. P3. Select appropriate tools for manual drilling. P4. Operate hand-held drilling tools safely.



	P5. Ensure correct drilling angle and depth
CU5. Perform rotary drilling	You must be able to: P1. Identify size of hole for drilling P2. Select drill bit(diamond) for rotary drilling P3. Perform drilling for required area
CU6. Perform reclamation	You must be able to: P1. Clear site of debris P2. Backfill drill holes with suitable materials. P3. Clean all equipment as required P4. Restore drainage followed by natural contours of the site

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard.

This includes the knowledge of:

- Drilling process
- Drilling techniques
- Mud parameters
- Drilling techniques
- Drilling methods
- Cleaning techniques

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Calculate mud parameters
- Perform rotary drilling
- Prepare drilling site
- Mark out drill pattern



Tools and Equipment

- The tools and equipment required for this competency standard are given below:
- Drilling equipment and machine
- Mechanical tool kit
- pH meter
- Viscometer
- Air filter restriction indicator
- Cab (horn, lights, air conditioner)
- Display instrumentation and gauges
- Visual and audio warning devices and lights



724MP13D-Perform Blasting Operation

Overview: This unit covers the knowledge and skills required to perform blasting operation. You will be able to calculate the properties of explosives, pre-blast operations, maintain magazine /kit for blasting process and detonate site. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Unit	Performance Criteria
CU1. Identify the Types of Explosives as per Their Properties for Blasting	You must be able to: P1. Classify explosives based on chemical composition P2. Match explosives to specific blasting requirements. P3. Measure detonating pressure P4. Report unsafe or incorrect explosive types to supervisor
CU2. Maintain safety kits for blasting process	You must be able to: P1. Inspect safety kits before each blasting operation P2. Store explosives following regulations related to handling accessories P3. Label safety equipment clearly for easy access P4. Check expiry dates, then report damaged stock.
CU3. Prepare layout for blasting as per plan	You must be able to: P1. Prepare layout for blasting according to site requirements. P2. Verify layout with supervisor prior to drilling. P3. Mark drill hole positions based on a approved design P4. Determine burden, calculate spacing, measure depth. P5. Place warning signs and install barriers around blast area.
CU4. Arrange pre-blast operations as per plan	You must be able to: P1. Review blasting plan before initiating operations. P2. Notify nearby personnel about the upcoming blast. P3. Clear blast area of unauthorized persons. P4. Carry explosive material from designated place to blast-holes.



	P5. Position equipment away from the blast zone. P6. Confirm readiness of all safety measures.
CU5. Set-up blast site	You must be able to: P1. Erect physical barricades at the blast site. P2. Install signage around the restricted area. P3. Load explosives into the drilled holes. P4. Fill blast holes using appropriate stemming material. P5. Connect the initiation system as per blasting plan. P6. Return unused explosives to the designated storage area. P7. Return leftover materials to their proper place.
CU7. Conduct post blast operations	You must be able to: P1. Inspect blast area for misfires and hazards. P2. Check clearance signal before entering the blast zone. P3. Collect fragmented material from the blast site. P4. Record details of the blast in the logbook. P5. Dispose of used materials as per safety regulations.

Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- Describe history of explosive products
- Define explosive and blast agents
- Low and high explosives
- Chemistry and oxygen balancing of explosives
- Explain the concept of dynamite
- ANFO/dry agent
- Slurries, water agents and emulsions
- Explosive properties (strength, density, velocity and detonate pressure etc.
- Initiation system (electric and non-electric)
- Priming and its properties



- Types of priming
- Types of blast design (surface and underground)
- Rock properties
- Environmental effects of blasting
- Blasting safety
- Blasting procedures and regulations
- Emergency procedures
- Environmental and heritage procedures
- Equipment processes, technical capability and limitations
- Equipment safety requirements
- Geological and technical data
- Hazardous goods procedures and consequences of spills
- Isolation procedures
- Labeling procedures
- Mine operational system
- Night and day working procedures
- Occupational health and safety procedures
- Shutdown procedures
- Site procedures
- Startup procedures
- Storage procedures
- Types and characteristics of blasting agents, explosives and detonation mechanisms

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Identify and classify explosives based on their properties for specific blasting needs.
- Prepare and verify the blasting layout in accordance with the site plan.
- Set up the blast site with appropriate safety signs, barricades, and equipment.
- Load explosives and connect the initiation system following standard safety procedures.



- Conduct post-blast inspection and record findings in the blast logbook.

Tools and Equipment

The tools and equipment required for this competency standard are given below:

Stationary item

- Measuring tape
- Marking spray or chalk
- Non-metallic tamping rod
- Explosives and detonators
- Detonating cord or shock tube
- Safety signs and barricade tape
- Personal Protective Equipment (PPE)
- First aid kit
- Fire extinguisher
- Blast logbook or checklist



724MP13E-Competency Standard: Perform Conveyor Operations

Overview: After completing this competency standard candidate will be able to evaluate conveyor operations.

Competency Unit	Performance Criteria
CU1. Prepare for conveyor operations	<i>You must be able to:</i> P1. Clear the area of obstructions to ensure safe access. P2. Inspect conveyor system components for wear or damage. P3. Verify proper alignment of rollers and structure. P4. Adjust belt tension according to operational standards. P5. Confirm system readiness before starting operation
CU2. Operate conveyor	<i>You must be able to:</i> P1. Start conveyor system following standard operating procedures. P2. Monitor material flow throughout the operation. P3. Adjust feed rate to maintain smooth operation. P4. Shut down conveyor according to standard protocols. P5. Record operational data accurately in the logbook.
CU3. Carry out maintenance of Conveyor	<i>You must be able to:</i> P1. Identify required routine maintenance tasks based on equipment schedule. P2. Inspect conveyor components to detect faults or wear. P3. Clean components to remove dust, debris, or buildup. P4. Replace faulty parts or repair damaged components. P5. Lubricate moving parts to ensure smooth and efficient operation.
CU4. Conduct housekeeping activities	<i>You must be able to:</i> P1. Remove debris from the operation site. P2. Clean conveyor equipment after use. P3. Secure tools after cleaning. P4. Report hazards to the relevant authority.



	P5. Complete housekeeping records using the given format.
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Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out tasks covered in this competency standard. This includes:

- Understanding of the importance of cleanliness for operational efficiency and safety
- Knowledge of workplace housekeeping standards and protocols
- Awareness of hazards caused by poor housekeeping practices
- Familiarity with cleaning methods for equipment and work areas
- Ability to identify and report hazards at the site
- Knowledge of proper waste disposal procedures
- Understanding of how to maintain tools and equipment after use
- Skills in completing documentation related to housekeeping tasks
- Awareness of company policies regarding site maintenance
- Understanding the role of housekeeping in preventing accidents and improving productivity

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Identify conveyor components and safety features before operation.
- Start and operate conveyor system following standard procedures.
- Monitor material flow and adjust feed rate during operation.
- Shut down conveyor system safely and correctly.
- Inspect conveyor parts for wear or damage during maintenance.
- Lubricate moving parts as per maintenance schedule.
- Replace or repair faulty parts based on inspection findings.
- Remove waste materials from the conveyor and work area.
- Complete maintenance and housekeeping checklists accurately.
- Report any faults, hazards, or maintenance actions to the supervisor.

Tools and Equipment



The tools and equipment required for this competency standard are given below:

- Prepare for conveyor operations
- Operate conveyor
- Carry out maintenance of conveyor
- Conduct housekeeping activities
- Spanner set
- Screwdrivers
- Grease gun
- Belt tension gauge
- Alignment tools
- Cleaning brush
- Industrial vacuum
- Mop and bucket
- Shovel
- Dustpan
- Waste bin
- PPE (gloves, safety shoes, helmet, goggles)
- Maintenance checklist
- Logbook or operation record sheet



724MP13F-Competency Standard: Perform Basic Computer Operations

Overview: This Competency Standard identifies the competencies required to install basic computer hardware, software, applications and troubleshooting. Trainee will be able to apply acquired skills in operating a computer system and software such as MS Word, MS PowerPoint, MS Excel as well as installation and troubleshooting of operating system and software. The underpinning knowledge regarding basic computer operations will be sufficient to provide the basis for trainee's work.

Competency Units	Performance Criteria
CU1. Perform basic Configuration of Computer System	<i>You must be able to:</i> P1. Connect hardware components as per requirements. P2. Install operating system using standard procedure. P3. Install essential drivers for system devices. P4. Configure basic system settings. P5. Verify system functionality after setup.
CU2. Create a document using MS word	<i>You must be able to:</i> P1. Open MS Word and select a blank document. P2. Format text and layout as per given requirements. P3. Save document with specified name and location. P4. Print document according to instructions.
CU3. Prepare Spreadsheet using MS Excel	<i>You must be able to:</i> P1. Create worksheet based on provided data. P2. Format worksheet as per given instructions. P3. Apply formulas according to requirements. P4. Generate charts or graphs using worksheet data. P5. Print worksheet as per specified layout.
CU4. Prepare a presentation using MS Power Point	<i>You must be able to:</i> P1. Insert slides using appropriate layouts. P2. Add text, tables, and images as per content requirements. P3. Apply animations to slide elements. P4. Apply transitions between slides. P5. Add sound effects to objects or text.



P6. Deliver presentation following the 7 Cs of communication.

Knowledge & Understanding

The trainee must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Operating systems
- Hardware and Software
- Troubleshooting
- Hyperlink and referencing
- Printing
- Formulas
- Short Keys
- WPM (Word Per Minute)

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Install MS Office Application correctly
- Prepare a formatted document using MS Word
- Enter data into the respective columns and rows as per given instructions
- Set page layouts and margins
- Apply any slide transition on entire presentation.

Tools and Equipment

The tools and equipment required for this competency standard are given below:

- Computer system
- Printer



724MP13G-Competency Standard: Develop 2D Drawings

Overview: This competency standard covers the skills and knowledge required to develop and prepares 2D objects. The underpinning knowledge regarding 2D drawings will be sufficient to provide the basis for trainee’s work.

Competency Units	Performance Criteria
CU1. Develop 2D Objects	<i>You must be able to:</i> P1. Launch 2D design software (i.e. AutoCAD). P2. Set up drawing parameters (units, layers, and grid). P3. Create basic shapes using drawing tools (line, circle, rectangle, etc.). P4. Save AutoCAD drawing files in different file formats (DWG, PDF, and JPG).
CU2. Prepare Final Set of 2D Drawings	<i>You must be able to:</i> P1. Use appropriate command and tools to develop 2D Drawing P2. Develop 2D Drawing with given project specifications and measurements P3. Create title block layout as required P4. Plot drawing on scale according to required size and orientation

Knowledge & Understanding

The trainee must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Basic Drawing Settings
- Unit setting
- Limits setting
- User coordinate system Workspace setting
- Object Snap Settings
- Basic Commands and Concepts Angles and lines in AutoCAD.



- Differentiate between absolute, relative and polar system
- DIMSTYLE and MTEXT commands
- HATCHING concepts in AutoCAD
- Differentiate between CHAMFER and FILLET command
- Types of Array
- OFFSET, CIRCLE and ROTATE short commands
- Zooming options
- Tools palettes window
- Design center
- Scale and paper sizes
- Modify dimension style and text size according to paper size
- Backup file

Tool and Equipment

- Computer with all accessories
- Printer

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Draw a Set of 2D Drawings
- Print different drawings



724MP13H-Competency Standard: Manage Inventory of Mine Material

Overview: This competency standard identifies competencies required to manage inventory of mine material. You will be able to maintain log register, measure the raw material available in dump yard, perform safe storage of raw material, and inspect raw material. Your underpinning knowledge will be sufficient to provide you the basis for your work.

Competency Units	Performance Criteria
CU1. Inspect mineral material	<i>You must be able to:</i> P1. Collect mineral samples using standard sampling methods. P2. Examine physical properties including color, texture, and grain size. P3. Identify impurities through visual inspection or basic tools. P4. Record findings and report abnormalities.
CU2. Measure the raw material available in the stack yard	<i>You must be able to:</i> P1. Select suitable tools for measuring raw material. P2. Mark boundaries of the raw material stack. P3. Calculate volume using standard formulas. P4. Record measurements and report as per procedures.
CU3. Maintain safe storage of mineral material	<i>You must be able to:</i> P1. Dump materials according to graded sizes. P2. Check material quality using visual inspection. P3. Verify material quantity following standard procedure. P4. Prepare ground surface to avoid contamination. P5. Maintain logbook for material inflow. P6. Record material outflow as per site procedures.



CU4. Maintain the Log Register	You must be able to: P1. Update log register on a daily basis. P2. Enter data for each type of raw material. P3. Match log entries with on-site material during audit. P4. Report discrepancies to the in-charge. P5. Prepare production or dispatch record sheet.
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Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- Identify types and properties of mineral materials
- Follow standard procedures for sample inspection
- Use tools to measure raw material accurately
- Calculate volume and estimate material quantity
- Apply safe storage practices to avoid contamination
- Classify materials by size and quality
- Maintain accurate log registers and daily records
- Audit records against on-site materials
- Report issues related to material storage and tracking
- Understand basic principles of material traceability and safety

Tool and Equipment

- Sample bags or containers
- Hand lens or magnifying glass
- Measuring tape
- GPS device
- Leveling staff
- Calculator
- Clipboard and notebook



- Shovel or scoop
- PPE (gloves, safety shoes, helmet, dust mask)
- Log register or record sheets

Critical Evidence(s) Required

The candidate needs to produce following **Critical Evidence(s)** in order to be competent in this competency standard:

- Collect and inspect mineral samples using standard procedures.
- Record physical characteristics such as color, texture, and grain size.
- Measure raw material volume using approved tools and methods.
- Calculate estimated quantity based on stack dimensions.
- Dump and store materials by size and type in designated areas.
- Prevent contamination through proper ground preparation.
- Update and maintain log register with accurate entries.
- Match recorded data with on-site materials during audits.
- Report any discrepancies, hazards, or irregularities.
- Prepare production or dispatch records as per site procedures.



COMPLETE LIST OF TOOLS AND EQUIPMENT

Sr. #	Description
1.	Computer system
2.	White board
3.	Printer
4.	Multimedia
5.	Safety Helmets
6.	Blankets
7.	Board of Safety instructions.
8.	Chain Hoist
9.	Circuit Diagrams for Plants
10.	Sieve set
11.	Digital Balance
12.	Ear Plug
13.	Face mask
14.	Fire Buckets.
15.	Fire Extinguishers
16.	First aid Kit
17.	Hand gloves
18.	Hooks / Anchors
19.	Manufacturers Operation and Maintenance Manual & Video;
20.	Measuring Tape
21.	Multimeter
22.	Safety Apron
23.	Safety Belts
24.	Safety goggles
25.	Safety harness
26.	Safety net



27.	Safety Shoes
28.	Shovels with handle
29.	Simulated version of crushing plant operational software.
30.	Slings
31.	Spatula
32.	Spirit Level
33.	Stretcher
34.	Various hand / power tools
35.	Computers
36.	Printer
37.	Scanner
38.	Internet router
39.	Application Software
40.	Log Books
41.	Stationary Items
42.	Plant software

43.	Cameras
44.	Jackhammer
45.	Conveyors
46.	Hoppers
47.	Steel Rules
48.	Tri Square
49.	Vernier Caliper
50.	Thread gauges
51.	Screw pitch gauges
52.	Feeler gauges
53.	Micrometer
54.	Snap Gauge set
55.	Dial Bore Gauge
56.	Set of Adjustable Wrench



57.	Set of Spanners (Open end, Ring)
58.	Pipe wrench
59.	L-key sets
60.	Nose pliers
61.	Grip pliers
62.	Straight peen Hammer
63.	Ball peen Hammer
64.	Claw Hammer

65.	Tong
66.	Chisel
67.	Hand hacksaw
68.	Socket set
69.	Slip joint plier
70.	Plier
71.	Inventory register
72.	Screw driver set
73.	Conveyor belt and component
74.	Visual and audio warning devices and lights
75.	Calculator
76.	Ancillary equipment (generators, pumps, lights, compressors, cleaning equipment, power tools, hand tools)
77.	Blasting machines and tools
78.	Drilling equipment and machine
79.	Mechanical tool kit
80.	pH meter
81.	Air filter restriction indicator
82.	Viscometer
83.	Cab (horn, lights, air conditioner)
84.	Display instrumentation and gauges (indicators, gauges, laser levels), computer systems



85.	Engine and stop engine lights (orange and red)
86.	Fluid levels (windscreen washer tank, hydraulic oil, coolant, grease, water, engine oil, fuel)
87.	Visual and audio warning devices and lights