



Model Curriculum

QP Name: Rig-Mounted Drill Operator

QP Code: MIN/Q1205

QP Version: 2.0

NSQF Level: 4

Model Curriculum Version: 2.0

Skill Council for Mining Sector || B-311, Okhla Industrial Area, Phase-I, New Delhi-110020
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Training Parameters

Sector	Mining
Sub-Sector	Mining Operation
Occupation	Drilling/Cutting
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8111.0401
Minimum Educational Qualification and Experience	8th grade pass plus 2-year NTC plus 1 Year NAC OR 8th pass plus 1-year NTC plus 1-Year NAC plus CITS OR 10th grade pass and pursuing continuous schooling OR 10th grade pass with 2 years relevant experience OR Previous relevant Qualification (Jr. Rig-Mounted Drill Operator) of NSQF Level 3.0 with minimum education as 5th Grade pass with 2 years relevant experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	20 years
Last Reviewed On	26/05/2022
Next Review Date	26/05/2025
NSQC Approval Date	26/05/2022
QP Version	2.0
Model Curriculum Creation Date	26/05/2022
Model Curriculum Valid Up to Date	26/05/2025
Model Curriculum Version	2.0
Minimum Duration of the Course	510 hours
Maximum Duration of the Course	510 hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner will be able to:

- Perform the steps on how to prepare the drill rig
- Demonstrate how to perform drill operation on drill rig
- Show how to perform routine maintenance and troubleshooting on the drill rig
- Explain about the reporting and documentation of the drill rig
- Discuss worksite health, safety and environmental guidelines for opencast mines

Compulsory Modules

The table lists the modules, their duration and mode of delivery.

NOS and Module Details	Theory Duration (hrs)	Practical Duration (hrs)	On-the-Job Training Duration (Mandatory) (hrs)	On-the-Job Training Duration (Recommended) (hrs)	Total Duration (hrs)
Bridge Module(s)	10:00	00:00	00:00		10:00
Module 1- Introduction to the Job Role of Rig Mounted Drill Operator	10:00	00:00	00:00		10:00
MIN/N1214: Prepare Drill Rig <i>NOS Version No. 1.0</i> NSQF Level- 4	30:00	60:00	50:00		140:00
Module 2: Prepare Drill Rig	30:00	60:00	50:00		140:00
MIN/N1215: Perform Drill Operation on Drill Rig <i>NOS Version No.1.0</i> NSQF Level - 4	20:00	60:00	40:00		120:00
Module 3: Perform Drill Operation on Drill Rig	20:00	60:00	40:00		120:00
MIN/N1216: Perform Routine Maintenance and Troubleshooting on the Drill Rig <i>NOS Version No. 1.0</i> NSQF Level – 4	10:00	20:00	30:00		60:00

Module 4: Perform Routine Maintenance and Troubleshooting on the Drill Rig	10:00	20:00	30:00		60:00
MIN/N1217: Carry out Reporting and Documentation for the Drill Rig <i>NOS Version No. 1.0</i> NSQF Level – 4	10:00	20:00	30:00		60:00
Module 5: Carry out Reporting and Documentation for the Drill Rig	10:00	20:00	30:00		60:00
MIN/N1703: Follow Health, Safety, and Environmental Guidelines for opencast mines (Including Mine Vocational Training Rule) <i>NOS Version No. 1.0</i> NSQF Level – 4	10:00	20:00	30:00		60:00
Module 6: Follow Health, Safety, and Environmental Guidelines for opencast mines	10:00	20:00	30:00		60:00
DGT/VSQ/N0102: Employability Skills (60 Hours) <i>NOS Version No. 1</i> NSQF Level- 4	24:00	36:00	00:00	-	60:00
Introduction to Employability Skills	00:30	01:00	00:00	-	01:30
Constitutional values - Citizenship	00:30	01:00	00:00	-	01:30
Becoming a Professional in the 21st Century	01:00	01:30	00:00	-	02:30
Basic English Skills	04:00	06:00	00:00	-	10:00
Career Development & Goal Setting	01:00	01:00	00:00	-	02:00
Communication Skills	02:00	03:00	00:00	-	05:00
Diversity & Inclusion	01:00	01:30	00:00	-	02:30
Financial and Legal Literacy	02:00	03:00	00:00	-	05:00
Essential Digital Skills	04:00	06:00	00:00	-	10:00
Entrepreneurship	03:00	04:00	00:00	-	07:00



Customer Service	02:00	03:00	00:00	-	05:00
Getting Ready for Apprenticeship & Jobs	03:00	05:00	00:00	-	08:00
Total Duration	114:00	216:00	180:00		510:00

Module Details

Module 1: Introduction to the Job Role of Rig-Mounted Drill Operator

Bridge Module

Terminal Outcomes:

- Discuss the scope of a Rig Mounted Drill Operator.
- Throw light on the role and responsibilities of a Rig Mounted Drill Operator

Duration: 10:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> ● Describe the job role & responsibilities of Rig Mounted Drill operator. ● Explain the concepts of Rig Mounted Drill. ● Discuss the overall steps and processes of Rig Mounted Drilling. ● Discuss Regulatory context specific to Opencast Mines. 	
Classroom Aids	
LCD Projector, Laptop/Computer with internet, White Board, Flip Chart, Markers	
Tools, Equipment and Other Requirements	
Posters describing different types of Mines and associated operations	

Module 2: Prepare Drill Rig

Mapped to MIN/N1214, v1.0

Terminal Outcomes:

- Demonstrate how to conduct pre-operation checks
- Explain how to record details of checking and maintenance

Duration: 30:00	Duration: 60:00
<p>Theory – Key Learning Outcomes</p> <ul style="list-style-type: none"> ● Discuss about the job specific documents e.g. daily maintenance checklist and importance of the same. ● Elucidate how to ensure the water availability in the tank for dust wet drilling. ● Throw light on the risk and impact of not following defined procedures/work instructions. ● Cite the escalation matrix for reporting identified problems. ● Throw light on how to adhere to time limits given by supervisor. ● Calculate cost of equipment and loss for the company that results from damage of equipment. ● Check all direct/indirect cost of accidents to the company. ● Elucidate how to ensure that crown blocks are mounted securely. ● Highlight the implications of delays in process to the company. ● Explain the locally prepared emergency response/disaster management plan Safety Guidelines specified by Directorate General of Mine Safety (DGMS)). ● Discuss about different types of mines and detail of the mine he is working in. ● Highlight the mine organisation, timekeeping, need for discipline and punctuality. ● Describe about the benching in quarries, dressing of overhangs, undercuts, fencing, first aid and hygiene. ● State the code of traffic in specific areas of mine and significance of fences. 	<p>Practical – Key Learning Outcomes</p> <ul style="list-style-type: none"> ● Display how to check the condition of wiper, lights and functioning of emergency stop buttons. ● Show how to check various controls, gauges, warning lamp and other safety devices. ● Display how to check all hosepipe connections are in order, if using a compress air drill. ● Show how to check that drilling equipment is in safe operating condition. ● Apply suitable techniques to perform visual checks to detect cracks, wear and tear or any damage that could result in structural weakness. ● Demonstrate how to visually inspect to detect cracks or fractures in welded joints. ● Show how to apply grease to all greasing pins and pivot points. ● Role plays the situation on how to inform supervisor of problems that are beyond scope of his role.

- Elucidate how to check under carriage and super structure in the drill.
- Throw light on the standing orders in force at the mine. Safety in the vicinity of machinery.
- Elucidate how to check the drilling site is clear of other mine workers to avoid any accidents.
- Explain about shot-firing and Safety regulations. How and where to take shelter.
- Elucidate how to follow the manufacturer's instructions which apply to the care and safeoperation of the Drill.
- Describe about the tramways and siding, Haulage rooms, Winding rooms, Boilers, Electrical Gears.
- Throw light on how to maintain a checking/maintenance logbook to record all activities performed before starting the Drill.
- Cite the duties of workmen under Mines act.
- Discuss about the provision of wages, working hours and accident compensation asper Mines act.
- Cite the mining safety procedures.
- Highlight the outcome of violation of safely procedures.
- Throw light on the precautions to be taken when handling explosive.
- Describe the refresher training as per fourth schedule MVTR (1966) within one month of joining duties following absence from duties for a period exceeding one year.
- Explain about PPE'S to be used: Safety Helmet, Safety shoe, Safety goggles, Earmuff, Cloth hand gloves, Dust mask to protect from dust and noise, Fluorescent jacket.
- Enlist different types of drills and their specific use.
- Elucidate proper use and care of machine and cables, picks, bits, sharpening, shaping etc.
- Highlight the specification and details of blastholedrills used in open-cast mines.
- Enlist the instrument panel, various

<p>controls their location and operation.</p> <ul style="list-style-type: none"> ● Explain the lubrication of drills. ● Discuss about various levers and switches in order to operate the Drill properly. ● Highlight the different types of drill bits and their uses. ● Cite the common terminology vis-à-vis drilling. ● Highlight the precautions against falls/gas/coal dust. ● Throw light on the routine checks essential before starting drill operations. ● Elucidate the common troubles and remedies. ● Illustrate the signage, mining areas signs and other safety and emergency signals. ● Highlight the response to emergencies such as fire, accident, major failure etc. 	
<p>Classroom Aids</p>	
<p>LCD Projector, Laptop/Computer with internet, White Board, Flip Chart, Markers</p>	
<p>Tools, Equipment and Other Requirements</p>	
<p>Bucket loader, Front loader, front-end loader, pay-loader, scoop, shovel, skip loader, or wheel loader, Drill Machine, Hammer, Signage, Sample Helmet, gloves, Visibility harness, earplugs, goggles, nose mask, Diesel Engines, Electric Motors and compressors, Safety shoes, Fire extinguishers, Types of log book, First Aid box</p>	

Module 3: Perform Drill Operation on Drill Rig

Mapped to MIN/N1215, v1.0

Terminal Outcomes:

- Demonstrate how to locomote drill rig by tramping or towing
- Show how to position and mount the drill
- Elucidate how to perform drilling operation

Duration: 20:00	Duration: 60:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> ● Explain the types of documentation in organization e.g. daily maintenance checklist and importance of the same. ● Discuss how to plan and organize the job according to given instructions. ● Discuss the risk and impact of not following defined procedures/work instructions. ● Cite how to organize daily consumables according to the day’s plan. ● Cite the rules and regulations of mine as per standard operating procedure(SOP) ● Highlight the risk and impact of not following company’s SOP. ● Cite how to ensure all necessary precautions are adhered to before towing the drill to a distant site. ● Throw light on the escalation matrix for reporting identified problems. ● Explain the duties and responsibilities associated with his job role as per the employer cost of delays to the company. ● Elucidate how to ensure that the OEM prescribed limit for angles of inclination are followed during trimming and setting up of drills. ● Cite the direct/Indirect cost of accidents to the company. ● Discuss how to follow the standard operating procedure of marching of machine. ● Describe the locally prepared emergency Response/disaster management plan. 	<ul style="list-style-type: none"> ● Display how to operate propelling motor control levers to smoothly move the drill machine in all four directions. ● Show how to raise drill guide to 1.5 m aboveground level and make it horizontal to prevent any damage in transit. ● Display how to ensure a stable base for mounting the drill. ● Demonstrate how to adjust the tracks by methodically manipulating the positions of oscillation cylinder valve and hydraulic track valve. ● Show how to follow drill depth plans and ensure quality of holes by dipping and re- drilling before leaving drill area. ● Explain how to demonstrate caution against hazards of drill machine in operation. ● Show how to check that machine should not be moved over drilled hole.

Safety Guidelines specified by Directorate General of Mine Safety(DGMS))

- Cite the different types of mines and detail of the mine he is working in.
- Discuss how to avoid accidental fall of drill rod/hammer/bit in the drilled blast hole.
- Highlight the mine Organisation, timekeeping, need for discipline and punctuality.
- Explain the benching in quarries, dressing of overhangs, undercuts, fencing, first aid and hygiene.
- Elucidate the code of traffic in specific areas of mine. Significance of fences.
- Discuss how to ensure that the highest level of quality is consistently maintained.
- Cite the standing orders in force at the mine. Safety in the vicinity of machinery.
- Describe how to ensure all associated products (couplings/rods etc.) are used to their maximum potential while ensuring their sustainability.
- Discuss the shot-firing and safety regulations. How and where to take shelter.
- Cite how to reduce down time and wastage.
- Throw light on the tramways and siding, Haulage rooms, Winding rooms, Boilers, Electrical Gears.
- Cite the duties of work men under Mines act.
- Discuss how to follow the standard operating procedure while performing drill operation.
- Highlight the provision of wages, working hours and accident compensation as per Mines act.
- Cite the mining safety procedures.
- Describe how to ensure three-point contacts with supports should always be followed while climbing / getting down avoiding fall from height.
- Discuss the outcome of violation of safety procedures.

- Highlight how to ensure machine should be kept clean and dry to avoid fall of persons.
- Explain the precautions to be taken when handling explosives.
- Discuss how to ensure wet drilling is being done to avoid dust generation.
- Describe the Refresher training as per fourth schedule MVTR (1966) within one month of joining duties following absence from duties for a period exceeding one year.
- Elucidate the detection and precaution against inflammable and noxious gasses.
- Discuss about Drilling Machines. Diesel Engines, Electric Motors and compressors.
- Enlist different types of drills and their specific use.
- List down various levers and switches in order to operate the Drill properly.
- Discuss the drilling pattern and sequence of operations.
- List down different types of drill bits and their uses.
- Highlight common terminology vis-à-vis drilling.
- Describe operation of different assemblies and sub-assemblies such as under-carriage, compressors, and hydraulic / pneumatic systems.
- Cite the drill safety devices fitted on compressors.
- Highlight the correct sequence of operation of different levers.
- Elucidate the transmissions of compressed air from compressor to Drill head.
- Illuminate the selection of proper rotation speed and effect of excessive speeds on bit life.
- Highlight the specification and details of blast hole drills used in open-cast mines.
- Enlist the instrument panel, various controls their location and operation.
- Cite the lubrication system of drills.

- Highlight the drill hole design and impact of poor drill hole design on blasting.
- Discuss about the of fly rocks and air-blast.
- Cite the inclined hole, azimuth, deviation, dip.
- Throw light on safety during drilling, marching and other operations.
- Highlight the dangers from loose house joints and defective Houses.
- Describe how to comply with all company Quality, Health, Safety and Environment policies and procedures.
- Illustrate the signage, mining area signs and other safety and emergency signals.
- Discuss the wet cutting, drilling method, drilling pattern.
- Cite the dangers from cutting/ drilling in stone band.
- Elucidate the slope failures, Joint spacing, Caving.
- Explain the fleeting of ore cutting machine on gradient.
- Discuss about keeping machinery reasonably free from dust.
- Cite the applicable regulations.
- Highlight the danger of drilling in hot strata.
- Discuss the short firing, miss fire, revealing holes, sleeping holes.

Classroom Aids

LCD Projector, Laptop/Computer with internet, White Board, Flip Chart, Markers

Tools, Equipment and Other Requirements

Bucket loader, Front loader, front-end loader, pay-loader, scoop, shovel, skip loader, or wheel loader, Drill Machine, Hammer, Signage, Sample Helmet, gloves, Visibility harness, earplugs, goggles, node mask, Diesel Engines, Electric Motors and compressors, Safety shoes, Fire extinguishers, Types of log book, First Aid box

Module 4: Perform Routine Maintenance and Troubleshooting of the Drill Rig

Mapped to MIN/N1216, v1.0

Terminal Outcomes:

- Demonstrate how to perform routine maintenance of drill rig
- Show how to do basic diagnostics and troubleshooting of the drill rig

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> ● Discuss the types of documentation in organization e.g. daily maintenance checklist and importance of the same. ● Throw light on the risk and impact of not following defined procedures/work instructions. ● Explain the rules and regulations of mine as per standard operating procedure (SOP). ● Cite the risk and impact of not following company's SOP. ● Highlight the escalation matrix for reporting identified problems. ● Discuss how to replenish coolants, lubricants and fluids. ● Elaborate different types of mines and detail of the mine he is working in. ● Throw light on mine organisation, time keeping, need for discipline and punctuality. ● Discuss benching in quarries, dressing of overhangs, undercuts, fencing, first aid and hygiene. ● Cite the code of practice in specific areas of mine. Significance offences. ● Discuss how to check structural safety of the drill machine. ● Elucidate the standing orders in force at the mine. Safety in the vicinity of machinery. ● Highlight the complete timely and legibly daily/weekly maintenance sheets. ● Throw light on shot-firing and Safety regulations. How and where to take shelter. ● Throw light on how to ensure the machine is on firm and level ground before attempting to carry out any maintenance activity. 	<ul style="list-style-type: none"> ● Elucidate how to track machine operating hours to assess their right service schedule. ● Display how to clean air filter dustbowls. ● Show how to clean footplates, pedals and steps free from mud, dirt, ice and snow. ● Display how to drain water and sediment/fuel separators. ● Show how to grease all greasing pins and pivot points. ● Display how to check battery levels and condition of the terminals and carrying out minor adjustments if required. ● Show how to check and maintain the tyre rims, air pressure, wheel nuts and treads. ● Apply suitable techniques to assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel. ● Display how to evacuate to safe location, threatening the safety and health of workers. ● Show how to start, stop, restart, remove or alter not to be done without official authorization.

- Discuss PPE by workmen.
- Explain how to ensure that no maintenance task on the engine is performed when running or still hot.
- Explain tramways and siding, haulage rooms, winding rooms, boilers, electrical gears.
- Describe how to ensure proper Lock out and Tag out scenario to avoid any untoward incident triggered due to unknowingly operation of machine/ system under maintenance.
- Describe the duties of workmen under Mines act.
- Cite the provision of wages and working hours as per Mines act.
- Discuss how to complete timely and legibly defect sheets as provided by the company.
- Highlight the mining safety procedures.
- Elucidate how to take measures and precautions in regard to appropriate nature of mine operation to prevent detect and combat of mine fires as prescribed by mine officials.
- Discuss the outcome of violation of safely procedures.
- Explain the precautions to be taken when handling explosives.
- Describe the Refresher training as per fourth schedule MVTR (1966) within one month of joining duties following absence from duties for a period exceeding one year.
- Enlist the different types of drills and their specific use.
- Describe the Operation of different assemblies and sub-assemblies such as under-carriage, compressors, and hydraulic / pneumatic systems.
- Cite the specification and details of blast hole drills used in open-cast mines.
- Highlight the instrument panel, various controls their location and operation.
- Cite lubrication of drills.
- List down various levers and switches in order to operate the Drill properly.

- Highlight the drilling pattern and sequence of operations.
- List down different types of drill bits and their uses.
- Describe common terminology vis-à-vis drilling.
- Throw light on safety during drilling, marching and other operations.
- Describe how to comply with all company Quality, Health, Safety and Environment policies and procedures.
- Illustrate the signage, mining area signs and other safety and emergency signals.
- Explain about wet cutting, drilling method, drilling pattern.
- Highlight the dangers from cutting/ drilling in stone band.
- Discuss the fleeting of ore cutting machine on gradient.
- Elucidate keeping machinery reasonably free from dust.
- Enumerate the response to emergencies such as fire, accident, major failure, etc.
- Describe how to select, identify and use of right tools at right job.

Classroom Aids

LCD Projector, Laptop/Computer with internet, White Board, Flip Chart, Markers

Tools, Equipment and Other Requirements

Bucket loader, Front loader, front-end loader, pay-loader, scoop, shovel, skip loader, or wheel loader, Drill Machine, Hammer, Signage, Sample Helmet, gloves, Visibility harness, earplugs, goggles, node mask, Diesel Engines, Electric Motors and compressors, Safety shoes, Fire extinguishers, Types of log book, First Aid box

Module 5: Carry out Reporting and Documentation for the Drill Rig

Mapped to MIN/N1217, v1.0

Terminal Outcomes:

- Discuss how to report problems/incidents, etc.
- Show how to do recording and documentation

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> ● Describe about the types of documentation in organization e.g. daily maintenance checklist and importance of the same. ● Discuss how to report problems/incidents as applicable in a timely manner. ● Cite the risk and impact of not following defined procedures/work instructions. ● Highlight the rules and regulations of mine as per standard operating procedure (SOP). ● Explain how to follow reporting procedures as prescribed by the employer. ● Discuss risk and impact of not following company’s SOP. ● Throw light on identify documentation to be completed relating to one’s role. ● Cite the escalation matrix for reporting identified problems. ● Discuss how to record details accurately using the appropriate format. ● Highlight the duties and responsibilities associated with his job role as per the employer. ● Cite on how to complete all documentation within stipulated time. ● Highlight different types of mines and detail of the mine he is working in. ● Cite the commonly used mining Terminology-Benches (width, height, etc.), haul roads (width, gradient), stability of slopes, over hang, undercut, high side, etc. ● Explain the code of traffic in specific areas of mine and significance of fences. ● Cite the duties of work men under Mines act. 	<ul style="list-style-type: none"> ● Role Play the situation on how to report to the appropriate authority as laid down by the employer. ● Apply suitable techniques to make sure documents are available to all appropriate authorities to inspect.

- Discuss the provision of wages, working hours and accident compensation as per Mines act.
- Highlight the mining safety procedures.
- Throw light on the outcome of violation of safety procedures.
- Discuss the precautions to be taken when handling heavy equipment.

Classroom Aids

LCD Projector, Laptop/Computer with internet, White Board, Flip Chart, Markers

Tools, Equipment and Other Requirements

Bucket loader, Front loader, front-end loader, pay-loader, scoop, shovel, skip loader, or wheel loader, Drill Machine, Hammer, Signage, Sample Helmet, gloves, Visibility harness, earplugs, goggles, nose mask, Diesel Engines, Electric Motors and compressors, Safety shoes, Fire extinguishers, Types of log book, First Aid box

Module 6: Follow Health, Safety, and Environmental Guidelines for opencast mines

Mapped to MIN/N1703, v1.0

Terminal Outcomes:

- Discuss worksite health and safety measures and environmental guidelines.

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> ● Explain how to comply with safety, health and security-related regulations/guidelines at the open cast mine and safety instructions given by the workman's inspector. ● Describe about various environmental awareness program related to mining, organized by the various government bodies/ company. ● Discuss how to follow adequate safety while working at haul roads, heights, overburden dumps, sump area, stockyard, near moving parts, etc. ● Recall the safety precautions to be taken while working on sites (sub-station, workshop etc.), with equipment, and conducting welding and cutting operations. ● Discuss how to follow appropriate Safe Operating Procedure (SOP) while dealing with explosives. ● Illustrate how to respond promptly and appropriately to an accident/ incident or an emergency situation, within limits of the role and responsibility. ● Discuss usage of appropriate PPE as per the requirement. ● Explain how to maintain hand hygiene by washing hands with alcohol based sanitisers/soap. ● Elucidate on how to maintain hygiene at the work site and disinfect the machine/tools before and after work/task. ● State how to report any symptoms of illness to the shift-in-charge. 	<ul style="list-style-type: none"> ● Show how to provide first aid to an injured person. ● Display how to operate various types of fire extinguishers to control different types of fire at a worksite when required. ● Role-play the situations on how to assist supervisor for reducing environmental impact caused due to related mining operations.

- Discuss the safety guidelines specified by Directorate General of Mine Safety (DGMS).
- List basic mining terminologies and definitions.
- Explain about the means of access and egress from the mines, location of workshop, haul roads and working face including dump yards.
- Outline about the shot-firing / blasting related safety regulations including taking shelter during blasting.
- Discuss the duties of workers, working hours and accident compensation as per under The Minesact-1952.
- Throw light on the hierarchy of the reporting.
- Recall the proper documents specific to the machine.
- Discuss about the machine operation, condition of the machine and worksite.
- Throw light on various problems/ incidents and precautions to be taken when handling heavy equipment.
- Throw light on the environmental impact of related opencast mining operations.
- Discuss how to follow the process for collecting, storing and disposing of the hazardous material and waste (like used oil, lubricant, battery, etc.) in compliance with worksite guidelines.
- Explain the process of top soil removal and management and ensure not to mix topsoil with waste in day to day tasks.
- Discuss how to ensure that HEMM is washed at the designated location.
- Illuminate on how to ensure the productivity of the machine for material/fuel conservation.
- Discuss the mineral conservation practices specified by the organization in accordance with MCDR-2017 (Mineral Conservation and Development Rules).

- Discuss the role of workmen inspector, safety committee and internal safety organization.
- Throw light on the signages, mining area-specific signs, and other safety and emergency signals.
- State the outcome of violation of safety procedures.
- Summarise the importance of sensitization towards different genders and PWD (Persons with Disabilities).
- Throw light on mine sump and pumping system of the mines.
- State the mine safety standard including illumination level, noise levels, dust level, pollutants, etc. at the work-site.
- List the common sources of pollution in the mines and ways to minimize it.
- Enlist the safety equipment like safety shoes, safety belt, tight fit clothing, hand gloves, safety goggles, gas detector, safety lamp, self-contained breathing apparatus, gum boots, ear plugs, face mask, etc.
- Discuss emergency response /disaster management plan prepared by the organization.

Classroom Aids

LCD Projector, Laptop/Computer with internet, White Board, Flip Chart, Markers

Tools, Equipment and Other Requirements

Helmet, gloves, harness, earplugs, Safety Goggles, Nose mask, Safety shoes, Fire extinguisher, Types of log book, First Aid box, MCDR, MCR, Company's SOP; Diagrams showing quarries, overhangs, fencing, etc.; samples of different types of rocks to be encountered; Mines Act; "5-S" Charts; Daily, Weekly, Monthly Maintenance/Defect sheets; Systematic Support Plan (SSP); Systematic Support Rules (SSR); self-rescue apparatus; Line Diagram of Ventilation Circuit; Alcohol based sanitizers; self-rescue apparatus; Gas Detector, Safety Lamp, Self-Contained Breathing Apparatus, gum boots; Diagrams of Armoured face conveyor; Charts of coal mines occupational diseases; CMR; MMR; MRR, Company's Safety Management Plan (SMP) and Emergency Management Plan (EMP);

Employability Skills (60 Hours)

Mapped to DGT/VSQ/N0102, v1.0

<i>Key Learning Outcomes</i>	
Introduction to Employability Skills	Duration: 1.5 Hours
<ol style="list-style-type: none"> 1. Discuss the Employability Skills required for jobs in various industries 2. List different learning and employability related GOI and private portals and their usage 	
Constitutional values - Citizenship	Duration: 1.5 Hours
<ol style="list-style-type: none"> 3. Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen 4. Show how to practice different environmentally sustainable practices. 	
Becoming a Professional in the 21st Century	Duration: 2.5 Hours
<ol style="list-style-type: none"> 5. Discuss importance of relevant 21st century skills. 6. Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life. 7. Describe the benefits of continuous learning. 	
Basic English Skills	Duration: 10 Hours
<ol style="list-style-type: none"> 8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone 9. Read and interpret text written in basic English 10. Write a short note/paragraph / letter/e-mail using basic English 	
Career Development & Goal Setting	Duration: 2 Hours
<ol style="list-style-type: none"> 11. Create a career development plan with well-defined short- and long-term goals 	
Communication Skills	Duration: 5 Hours
<ol style="list-style-type: none"> 12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette. 13. Explain the importance of active listening for effective communication 14. Discuss the significance of working collaboratively with others in a team 	
Diversity & Inclusion	Duration: 2.5 Hours
<ol style="list-style-type: none"> 15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD 16. Discuss the significance of escalating sexual harassment issues as per POSH act. 	
Financial and Legal Literacy	Duration: 5 Hours
<ol style="list-style-type: none"> 17. Outline the importance of selecting the right financial institution, product, and service 18. Demonstrate how to carry out offline and online financial transactions, safely and securely 19. List the common components of salary and compute income, expenditure, taxes, investments etc. 20. Discuss the legal rights, laws, and aids 	
Essential Digital Skills	Duration: 10 Hours
<ol style="list-style-type: none"> 21. Describe the role of digital technology in today's life 22. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely 23. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely 24. Create sample word documents, excel sheets and presentations using basic features 25. utilize virtual collaboration tools to work effectively 	
Entrepreneurship	Duration: 7 Hours
<ol style="list-style-type: none"> 26. Explain the types of entrepreneurship and enterprises 27. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan 28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement 29. Create a sample business plan, for the selected business opportunity 	

Customer Service	Duration: 5 Hours
30. Describe the significance of analyzing different types and needs of customers 31. Explain the significance of identifying customer needs and responding to them in a professional manner. 32. Discuss the significance of maintaining hygiene and dressing appropriately	
Getting Ready for apprenticeship & Jobs	Duration: 8 Hours
33. Create a professional Curriculum Vitae (CV) 34. Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively 35. Discuss the significance of maintaining hygiene and confidence during an interview 36. Perform a mock interview 37. List the steps for searching and registering for apprenticeship opportunities	

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Graduate/CITS	Any discipline	-	-	2	Teaching experience	Prospective ES trainer should: <ul style="list-style-type: none"> • have good communication skills • be well versed in English • have digital skills • have attention to detail • be adaptable • have willingness to learn
Current ITI trainers	Employability Skills Training (3 days full-time course done between 2019-2022)	-	-	-	-	
Certified current EEE trainers (155 hours)	from Management SSC (MEPSC)	-	-	-	-	
Certified Trainer	Qualification Pack: Trainer (MEP/Q0102)	-	-	-	-	

Trainer Certification	
Domain Certification	Platform Certification
Certified in 60-hour Employability NOS (2022), with a minimum score of 80% OR Certified in 120-, 90-hour Employability NOS (2022), with a minimum score of 80%	MEP/Q2601, v2.0 Trainer (VET and Skills). Minimum accepted score as per SSC guideline is 80%.

Master Trainer Requirements

Master Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Graduate/CITS	Any discipline	-	-	3	Employability Skills curriculum training experience with an interest to train as well as orient other peer trainers	Prospective ES Master trainer should: <ul style="list-style-type: none"> • have good communication skills • be well versed in English • have basic digital skills
Certified Master Trainer	Qualification Pack: Master Trainer (MEP/Q2602)	-	-	3	EEE training of Management SSC (MEPSC) (155 hours)	<ul style="list-style-type: none"> • have attention to detail • be adaptable • have willingness to learn • be able to grasp concepts fast and is creative with teaching practices and likes sharing back their learning with others

Master Trainer Certification	
Domain Certification	Platform Certification
Certified in 60-hour Employability NOS (2022), with a minimum score of 90% . OR Certified in 120-, 90-hour Employability NOS (2022), with a minimum score of 90%	MEP/Q2602, v2.0 Master Trainer (VET and Skills). Minimum accepted score as per SSC guideline is 90%.

Assessment Strategy

The trainee will be tested for the acquired skill, knowledge and attitude through formative/summative assessment at the end of the course and as this NOS and MC is adopted across sectors and qualifications, the respective AB can conduct the assessments as per their requirements.

LIST OF TOOLS & EQUIPMENT FOR EMPLOYABILITY SKILLS		
S No.	Name of the Equipment	Quantity
1.	Computer (PC) with latest configurations – and Internet connection with standard operating system and standard word processor and worksheet software (Licensed) (all software should either be latest version or one/two version below)	As required
2.	UPS	As required
3.	Scanner cum Printer	As required
4.	Computer Tables	As required
5.	Computer Chairs	As required
6.	LCD Projector	As required
7.	White Board 1200mm x 900mm	As required

Note: Above Tools & Equipment not required, if Computer LAB is available in the institute.

Proposed Assessment Strategy/Guidelines:

1. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria mentioned above).
2. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Class X	NA	6	Relevant experience required in Rig Mounted Drill Operation	NA	-	-
OR						
ITI	NA	6	Relevant experience required in Rig Mounted Drill Operation	NA	-	-
OR						
Diploma	Mechanical / Mining / any relevant trades	5	Relevant experience required in Rig Mounted Drill Operation	NA	-	-
OR						
B-Tech	Mechanical/ Mining/ any relevant trades	4	Relevant experience required in Rig Mounted Drill Operation	NA	-	-

Trainer Certification	
Domain Certification	Platform Certification
MIN/Q1205, v2.0 Rig-Mounted Drill Operator. Minimum accepted score as per SSC guideline is 80%.	MEP/Q2601, v2.0 Trainer (VET and Skills). Minimum accepted score as per SSC guideline is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training /Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
Class X	NA	8	Relevant experience required in Rig Mounted Drill Operation	NA	-	-
OR						
ITI	NA	8	Relevant experience required in Rig Mounted Drill Operation	NA	-	-
OR						
Diploma	Mechanical/ Mining/ any relevant trades	7	Relevant experience required in Rig Mounted Drill Operation	NA	-	-
OR						
Graduation	Mechanical/ Mining/ any relevant trades	6	Relevant experience required in Rig Mounted Drill Operation	NA	-	-

Assessor Certification	
Domain Certification	Platform Certification
MIN/Q1205, v2.0 Rig-Mounted Drill Operator. Minimum accepted score as per SSC guideline is 80%.	MEP/Q2701, v2.0 Assessor (VET and Skills). Minimum accepted score as per SSC guideline is 80%.



Assessment Strategy

Assessment system Overview:-

Assessment will be carried out by SCMS affiliated assessment partners. Based on the results of assessment, SCMS certifies the learners. Candidates have to pass online theoretical assessment which is approved by SCMS.

The assessment will have both theory and practical components in 30:70 ratio.

While theory assessment is summative and an online written exam; practical will involve demonstrations of applications and presentations of procedures and other components. Practical assessment will also be summative in nature.

Testing Environment:-

Training partner has to share the batch start date and end date, number of trainees and the job role.

Assessment is fixed for a day after the end date of training. It could be next day or later. Assessment will be conducted at the training venue.

Question bank of theory and practical will be prepared by assessment agency and approved by SCMS. From this set of questions, assessment agency will prepare the question paper. Theory testing will include multiple choice questions, pictorial question, etc. which will test the trainee on theoretical knowledge of the subject.

The theory and practical assessments will be carried out on same day. If number of candidates is many, more assessors and venue will be organized on same day of the assessment.

Assessment			
Assessment Type	Formative or Summative	Strategies	Examples
Theory	Summative	Written Examination	Knowledge of facts related to the job role and functions. Understanding of principles and concepts related to the job role and functions
Practical	Summative	Structured tasks	Presentation
Viva	Summative	Questioning and Probing	Mock interview on topics



Assessment Quality Assurance framework

Only certified assessor can be assigned for conducting assessment. Provision of 100 % video recording with clear audio to be maintained and the same is to be submitted to SCMS.

The training partner will intimate the time of arrival of the assessor and time of leaving the venue.

Methods of Validation:-

Unless the trainee is registered, the person cannot undergo assessment. To further ensure that the person registered is the person appearing for assessment, id verification will be carried out. Aadhar card number is required of registering the candidate for training. This will form the basis of further verification during the assessment. Assessor conducts the assessment in accordance with the assessment guidelines and question bank as per the job role. The assessor carries tablet with the loaded questions. This tablet is geotagged and so it is monitored to check their arrival and completion of assessment. Video of the practical session is prepared and submitted to SCMS. Random spot checks/audit is conducted by SCMS assigned persons to check the quality of assessment. Assessment agency will be responsible to put details in SIP.

SCMS will also validate the data and result received from the assessment agency.

Method of assessment documentation and access

The assessment agency will upload the result of assessment in the portal. The data will not be accessible for change by the assessment agency after the upload. The assessment data will be validated by SCMS assessment team. After upload, only SCMS can access this data. SCMS approves the results within a week and uploads on SIP.

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
RE	Rare Earths
SIP	Skill India Portal
SOP	Standard Operating Procedure
SCMS	Skill Council for Mining Sector