



Model Curriculum

QP Name: Dumper/Tipper Operator

QP Code: MIN/Q1402

QP Version: 2.0

NSQF Level: 4

Model Curriculum Version: 2.0

Skill Council For Mining Sector || Skill Council for Mining, FIMI House, B-311, Okhla Industrial Area
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Training Parameters

Sector	MINING
Sub-Sector	Mining Operation
Occupation	Loading and Hauling – Opencast
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8342.1201
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. Dumper/Tipper Operator) of NSQF Level 3.0 with minimum education as 5th Grade pass with 2 years relevant experience
Pre-Requisite License or Training	Preferable Heavy Motor Vehicle Driving License
Minimum Job Entry Age	20 Years
Last Reviewed On	27/01/2022
Next Review Date	27/01/2025
NSQC Approval Date	27/01/2022
QP Version	2.0
Model Curriculum Creation Date	27/01/2022
Model Curriculum Valid Up to Date	27/01/2025
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 should have acquired the listed knowledge and skills.

- Carry out pre-operation checks and routine maintenance of dumper/tipper.
- Start and drive the dumper/tipper safely.
- Operate the dumper/tipper in emergency situation such as failure of steering, brake, etc.
- Perform loading and hauling of the load to the designated destination.
- Discharge the loaded material efficiently.
- Follow the work schedule to achieve production target on time.
- Report any breakdown or abnormality of dumper/tipper appropriately.
- Complete documentation on time and as per organizational requirements.
- Comply with health, safety and environmental norms applicable for mining operations.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
Bridge Module(s)	10:00	00:00	00:00		10:00
Module 1: Introduction to the sector and the job role of Dumper/Tipper Operator	10:00	0:00	00:00	-	10:00
MIN/N1405 – Prepare the Dumper/tipper for Operations NOS Version No.-1 NSQF Level-4	20:00	40:00	50:00	-	110:00
Module 2: Pre-operation checks and routine maintenance of the Dumper/Tipper	10:00	20:00	30:00	-	60:00
Module 3: Recording and reporting the details of Dumper/Tipper's pre-operation inspection	10:00	20:00	20:00	-	50:00
MIN/N1406 – Perform Dumper/Tipper operations NOS Version No.-1 NSQF Level-4	40:00	40:00	40:00	-	120:00
Module 4: Starting and driving the Dumper/Tipper	20:00	20:00	20:00	-	60:00
Module 5: Perform loading, hauling and discharging operation	20:00	20:00	20:00	-	60:00

MIN/N1407 – Perform basic maintenance and troubleshooting of the Dumper/Tipper NOS Version No.-1 NSQF Level-4	20:00	40:00	30:00	--	90:00
Module 6: Perform preventive maintenance of the Dumper/Tipper	10:00	20:00	10:00	-	40:00
Module 7: Perform basic diagnosis and troubleshooting of the Dumper/Tipper	10:00	20:00	20:00	--	50:00
MIN/N1408 – Carry out reporting and documentation related to the Dumper/Tipper operation NOS Version No.-1 NSQF Level-4	10:00	10:00	10:00	-	30:00
Module 8: Carry Out Reporting and Documentation	10:00	10:00	10:00	-	30:00
MIN/N1703 – Follow Health, Safety, and Environmental guidelines for opencast mines (including Mine Vocational Training Rules) NOS Version No.-1 NSQF Level-4	20:00	20:00	50:00	-	90:00
Module 9: Follow Health and Safety guidelines	04:00	04:00	10:00	-	18:00
Module 10: Perform basic first-aid	04:00	04:00	10:00	-	18:00
Module 11: Use of fire extinguisher	04:00	04:00	10:00	-	18:00
Module 12: Health and Hygiene	04:00	04:00	10:00	-	18:00
Module 13: Environmental safety	04:00	04:00	10:00	-	18:00
DGT/VSQ/N0102: Employability Skills (60 Hours) NOS Version No. 1 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	144:00	186:00	180:00	-	510:00

Module Details

Module 1: Introduction to the sector and the job role of Dumper/Tipper Operator

Bridge Module

Terminal Outcomes:

- Discuss the scope of mining industry.
- Explain the role and responsibility of the dumper/tipper operator.

Duration: 10:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> ● Explain the importance of the mining industry. ● Discuss the provision of wages, working hours, leave, and accident compensation as per the Mines Act-1952. ● Explain the different types of mines such as open cast mines, underground mines, etc. ● Explain basic terminologies and machineries used in Opencast Mines. ● Describe the working cycle of opencast mines. ● List the role and responsibilities of dumper/tipper operator in mining industry. 	
Classroom Aids:	
LCD Projector, Laptop/Computer with internet, White Board, Flip Chart, Markers	
Tools, Equipment and Other Requirements	
Posters for describing different types of mines	

Module 2: Pre-operation checks and routine maintenance of the Dumper/Tipper

Mapped to MIN/N1405, v1.0

Terminal Outcomes:

- Perform the steps to prepare the dumper/tipper for operations.
- Discuss the functioning of various components of the dumper/tipper and the process of pre-operation checks.

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the functioning of various components of the dumper/tipper • List out the steps to be carried out as a part of pre-operation checks. • Explain the importance of all the meter/gauges available on the instrument panel and their malfunctioning effect. • Differentiate between various types of oil. • Describe the process of pre-operation checks as per the organization/original equipment manufacturer (OEM). • Discuss the various work related instructions to be given by the supervisor before the shift starts. • Recall the different types of levers provided in the dumper/tipper and its uses. • Outline the working principle of fire extinguishers, automatically operated fire suppression system and devices including fire detection system in the dumper/tipper • Discuss the importance of locking bar in the dumper/tipper. • Illustrate the essential purpose, functioning of various components and aggregates of the dumper/tipper. • Recall the optimal engine oil pressure, radiator coolant temperature, lube oil pressure, transmission oil pressure etc. during operation. • Differentiate between the various steering mechanisms. 	<ul style="list-style-type: none"> • Demonstrate the steps of checking the cleanliness of the dumper/tipper and outer element of air cleaner with compressed air. • Demonstrate the process of checking oil levels of engine, brake, differential and hydraulic. • Perform the examination of the water level in the radiator. • Perform the assessment of the condition of parking brake, main brake, warning lamp and head light etc. • Perform the examination of fan belt tension, electrolyte level and terminal tightness. • Show the process of filling/top-up of oil in engine, transmission, etc. • Employ suitable techniques to drain accumulated water from diesel tank. • Demonstrate the process of greasing different parts of dumper/tipper. • Demonstrate how to check the functionality of safety features in the dumper/tippers. • Show the steps for checking the proper functioning of fire extinguishers, automatically operated fire suppression system and devices including fire detection system in the dumper/tipper. • Read the logbook data. • Show the process of cleaning air filter dust bowls. • Display the checking process of main brake, emergency brakes, engine-cooling system, lifting jacks etc. • Demonstrate how to clean footplates and steps. • Demonstrate the process of checking and rectifying spills and leakages in the engine, hydraulic systems, transmission etc.

	<ul style="list-style-type: none"> • Apply suitable technique to check the different types of levers provided in the dumper/tipper. • Prepare a record of the readings of all gauges /meter in the instrument panels. • Show the process of checking air pressure in tyres. • Display the process of checking and adjusting the driving position, rear and side mirrors, and seat belt. • Perform the steps for confirming clear uninterrupted vision all around the dumper/tipper.
<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>Dumper/Tipper, Vehicle Driver Tool Box, Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective Jacket, Safety Belt, Gum Boots, Slide wrench, Dumper/Tipper simulator, Spanner Set, Pre-check list format, Oils (Engine Oil, Transmission Oil, hydraulic Oil etc.) for sample, Grease Can, Grease Gun</p>	

Module 3: Recording and reporting the details of Dumper/Tipper's pre-operation inspection

Mapped to MIN/N1405, v1.0

Terminal Outcomes:

- Demonstrate the recording and reporting process of dumper/tipper's pre-operation inspection.

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the importance of recording and reporting pre-operation inspection details. • List important parameters that need to be maintained in the logbook before starting the dumper/tipper. • Discuss the process of reporting the problems which are beyond one's purview. • Illustrate the reporting hierarchy to be followed for identified problems. 	<ul style="list-style-type: none"> • Role-play the situation on how to report details of pre-operation inspection to concerned person. • Fill the logbook with required details.
Classroom Aids:	
LCD Projector, Laptop/Computer with internet, White Board, Flip Chart, Markers	
Tools, Equipment and Other Requirements	
Log books, pre-checklist format	

Module 4: Starting and driving the Dumper/Tipper

Mapped to MIN/N1406, v1.0

Terminal Outcomes:

- Demonstrate the process of starting and driving the dumper/tipper
- Discuss traffic rules, functioning of various control, uses of switches etc.

Duration: 20:00	Duration: 20:00
<p>Theory – Key Learning Outcomes</p> <ul style="list-style-type: none"> • Describe the functioning of various control, switches, and levers. • List the various signs and symbols used in various mines site. • Explain the SOP to be followed for driving the dumper/tipper • Discuss the ways for driving the dumper/tipper under various ground conditions. • Explain how to maintain a safe distance between the two dumpers/tippers and its importance while driving. • List various limitations recommended by OEM/company such as load limit, speed etc. • Discuss the process of reporting any problem occurring while operating the dumper/tipper. • Outline the importance of following the traffic rules while driving the dumper/tipper. • Discuss various ways to optimize uses of dumper/tipper as per the instruction manual. • State all the bye-laws of DGMS (Directorate General of Mines Safety) related to driving of the dumper/tipper. • Discuss the various ways to achieve the production target. 	<p>Practical – Key Learning Outcomes</p> <ul style="list-style-type: none"> • Drive the dumper/tipper, using the different switches and levers effectively. • Demonstrate how to check all the gauges/meters in the instrument panels while driving. • Display the process of driving the dumper/tipper in different transmission gears as per requirement. • Exhibit reversing operation using safety indicators/features of the dumper/tipper. • Demonstrate turning operation of the dumper/tipper while using appropriate turning signal. • Show how to park the dumper/tipper at an appropriate place. • Show how to use parking brakes and stopper after parking the dumper/tipper. • Display driving of the dumper/tipper at night while following all safety norms. • Demonstrate how to use various signalling devices such as turn signal, parking indicator, air horn etc. as per requirement.
<p>Classroom Aids:</p> <p>LCD Projector, laptop/computer, white board, Flip Chart, Markers</p>	
<p>Tools, Equipment and Other Requirements</p> <p>Dumper/Tipper, Vehicle Driver Tool Box, Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective Jacket, Safety Belt, Gum Boots, Slide wrench, Dumper/Tipper simulator, Spanner Set</p>	

Module 5: Perform loading, hauling and discharging operation

Mapped to MIN/N1406, v1.0

Terminal Outcomes:

- Demonstrate loading, hauling and discharging operation of the dumper/tipper at designated place.
- Discuss the importance of following the safety norms.

Duration: 20:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the precautions to be taken while working at the dump-yard. • List the important factors/parameters to be considered for planning the dumper/tipper operation to optimize the time and fuel. • State major problems related to the dumper /tipper operations during night shift. • Recall various signals commonly used by shovel operator regarding unloading location as per the quality of loaded material. • Explain various ways to confirm that the dumper/tipper is on the level ground before discharging the load. • Explain how to engage levers and switches to operate the dumper/tipper properly. • Discuss the importance of instrument panel and various controls. 	<ul style="list-style-type: none"> • Demonstrate application of proper retarder brakes while driving downhill. • Show how to place the dumper/tipper at correct spotting location on the loading site • Display the process of discharging the load safely at given location. • Show how to operate the body hoist control to manoeuvre the hydraulic ram. • Demonstrate the process of discharging the load at dump yard as per SOP (standard operating Procedure). • Demonstrate the process of hauling the load within prescribed load and speed. • Employ the appropriate steps for ensuring that the dumper/tipper is on level ground while unloading.
Classroom Aids:	
LCD Projector, laptop/computer, white board, Flip Chart, Marker	
Tools, Equipment and Other Requirements	
Dumper/Tipper, Vehicle Driver Tool Box, Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective Jacket, Safety Belt, Gum Boots, Slide wrench, Dumper/Tipper simulator, Spanner Set	

Module 6: Perform preventive maintenance of the Dumper/Tipper

Mapped to MIN/N1407, v1.0

Terminal Outcomes:

- Demonstrate the use of tools and tackles for various maintenance tasks.
- Employ appropriate techniques of preventive maintenance of the dumper/tipper as per OEM.

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the process of routine services as per the OEM. • Differentiate between various hand tools required for maintenance. • Explain the uses of various hand tools required for maintenance. • List the various power tools and tackles required for maintenance. • Differentiate between various electrical tools, power circuit, assemblies. • Recall all safety precautions to be taken before any maintenance work. • Discuss the procedure of cleaning and washing the dumper/tipper. • Outline correct maintenance procedures for the dumper/tipper. • Explain the importance of visual checks to identify damage, defects or leaks. 	<ul style="list-style-type: none"> • Demonstrate how to use different tools in the various maintenance tasks. • Show the process of operating various power tools as per the requirement. • Exhibit the use of various tackles in different maintenance work. • Display the process of replacing the overage and worn out spare parts. • Demonstrate the process of 'Lock out and Tag out'. • Display the process of parking the dumper/tipper on a firm and level ground before attempting to carry out any maintenance activity. • Perform overhauling operation as per preventive maintenance schedule. • Exhibit how to replace different oils, coolant as per the OEM. • Demonstrate the process of replenishing coolants, lubricants, and fluids • Display the process of checking and maintaining the tyre rims, air pressure, wheel nuts and treads. • Demonstrate the process of checking the batteries voltage, terminals and fluid levels etc. • Show the steps to tighten the loose battery terminals with the help of an auto-electrician. • Perform testing of various systems as defined by the OEM. • Read the instrument panel to track machine's operating hours. • Fill the daily, weekly and monthly maintenance/defect sample sheets. • Dramatize the situation on how to assist a HEMM mechanic in carrying out the maintenance.

	<ul style="list-style-type: none"> • Role-play a situation on how to assist an auto-electrician while carrying out any maintenance work.
<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>Dumper/Tipper, Vehicle Driver Tool Box, Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective Jacket, Safety Belt, Gum Boots, Slide wrench, Dumper/Tipper simulator, Spanner Set, posters of tools, Poster of "5-S", Poster of Dumper/Tipper (describing the components), Grinder, Sanders, Impact Wrench, Power Drill, Rotary Tool, Chain Sling, Rope Sling, Hook, Shackle, Swivel, Coupling, socket, Clamp, Tray, Chain Pulley</p>	

Module 7: Perform basic diagnosis and troubleshooting of the Dumper/Tipper

Mapped to MIN/N1407, v1.0

Terminal Outcomes:

- Describe various parts of the dumper/tipper, their working principle and uses.
- Demonstrate various processes for performing basic diagnosis and troubleshooting of the dumper/tipper

Duration: 10:00	Duration: 20:00
<p>Theory – Key Learning Outcomes</p> <ul style="list-style-type: none"> • Explain basic technology used in the functioning of various components of the cooling system. • Outline the working principle of braking system, brake types, brake efficiency. • Describe the working principle of transmission systems (manual, automatic etc.) and their limitations. • Explain the drivelines and hubs, drive-train assembly. • Discuss about various clutch assembly and their functionality. • Recall the function of gear assembly. • Explain the theory of hydraulic systems. • Classify different types of pumps and control valves. • Illustrate the various error symbols displayed on instrument panel. • Discuss the reporting structure and maintenance / breakdown policy and procedures. • Explain the impact of diagnosis on the machine while it is hot or running. • Discuss the importance of complaint sheet, logbook and history sheet of the equipment. 	<p>Practical – Key Learning Outcomes</p> <ul style="list-style-type: none"> • Display the process of checking if machine is safe and ready for diagnosis. • Recognize the fault caused due to abnormalities during the operation of the dumper/tipper such as noise from engine, lower deck unit, bucket movement etc. • Demonstrate the steps to find out the irregularities in the hydraulic system, cooling system, power transmission system etc. • Demonstrate the steps of parking the dumper/tipper as per the required maintenance activity. • Exhibit the steps for finding any defect/cause of failure by checking the instrument panel and control gauge. • Display the diagnostic procedures as per the troubleshooting checklist prepared by the Original Equipment Manufacturer (OEM). • Use complaint sheet, logbook and history sheet of the equipment to identify repair requirements. • Show the process of conducting scheduled, routine examination and assessments against equipment specifications.
<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>Dumper/Tipper, Vehicle Driver Tool Box, Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective Jacket, Safety Belt, Gum Boots, Slide wrench, Dumper/Tipper simulator, Spanner Set, Grease Can, sample of engine oil, hydraulic oil etc., Poster showing brake system, Poster showing cooling system, Poster showing hydraulic system, Poster showing brake system</p>	

Module 8: Carry Out Reporting and Documentation

Mapped to MIN/N1408, v1.0

Terminal Outcomes:

- Describe the process of reporting and documentation related to dumper/tipper operations
- Differentiate between different types of documents.
- Demonstrate the correct reporting procedure.

Duration: 10:00	Duration: 10:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • List out different types of documents used in an organization. • Explain the procedure of reporting any incident/accident etc. • Discuss the handover and takeover procedure. • Recall all the parameters mentioned in logbooks. • Discuss the importance of calculating fuel consumption, ideal hours, breakdown hours etc. • Explain the importance of maintaining a good relationship with the supervisor/ and staff. • Explain the importance of gender-neutral behaviour. • Outline the importance of making the documents available to all appropriate authorities for inspection on time. 	<ul style="list-style-type: none"> • Prepare all the relevant documents required for the inspection regularly. • Fill all the relevant documents correctly. • Demonstrate the reporting procedure of daily activities.
Classroom Aids:	
LCD Projector, laptop/computer with internet, white board, Flip Chart, Markers	
Tools, Equipment and Other Requirements	
Maintenance based log books, Operation based log book, check list, MCDR based logbooks	

Module 9: Follow Health and Safety guidelines

Mapped to MIN/N1703, v1.0

Terminal Outcomes:

- Demonstrate the various health and safety related activities as per DGMS.
- Discuss the various safety precautions to be taken.

Duration: 04:00	Duration: 04:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Recall safety, health, and security-related regulations/guidelines relevant to one's role • Recall the safety regulations of shot firing/blasting activities • Explain the role of workmen inspector and safety committee. • Explain the preventive measures to be taken for the occupational diseases. • Recall the management plan to be followed in case of the emergency/disaster • Illustrate signages, mining area-specific signs, and other safety and emergency signals. • Recall all safety precautions to be taken while handling heavy equipment. • Recall the SOP to be followed while working near the electrical supply and equipment. • Explain the impact of the violation of safety procedures. 	<ul style="list-style-type: none"> • Demonstrate the various steps of safe material handling. • Demonstrate the use of Personal Protective Equipment (PPE) appropriately. • Demonstrate the correct process of handling and transporting of dummy explosive • Demonstrate the procedure of working at height.
Classroom Aids:	
LCD Projector, laptop/computer, white board, Flip Chart, Markers	
Tools, Equipment and Other Requirements	
Dumper/Tipper, Vehicle Driver Tool Box, Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective Jacket, Safety Belt, Gum Boots, Posters of Signages	

Module 10: Perform basic First-aid

Mapped to MIN/N1703, v1.0

Terminal Outcomes:

- Demonstrate how to provide first aid to an injured person in various situations.
- Discuss the applicability of first-aid station and first-aid room as per the Mines Act.
- Discuss the composition of first-aid box.

Duration: 04:00	Duration: 04:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the importance of First-Aid. • List the first aid box items • Explain the use of components of the first aid box. • Discuss first-aid procedure for different high-risk situations pertaining to various mining operations. • Recall all mandatory items to be available in First-aid room and First-aid station as per DGMS. • Explain different types of injuries and occupational disease. 	<ul style="list-style-type: none"> • Prepare a sample First-aid kit. • Prepare the stretcher using various other item such as ropes, clothes, belt etc. • Demonstrate the process of using various first-aid item. • Demonstrate the CPR (Cardio-Pulmonary Resuscitation) method. • Dramatize the emergency procedures during accidents or hazardous situations.
Classroom Aids:	
LCD Projector, laptop/computer with internet, white board, Flip Chart, Markers	
Tools, Equipment and Other Requirements	
First Aid Box, Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective Jacket, Safety Belt, Gum Boots, first-aid chart, stretcher, splint, sample emergency plan rope, clothes, belt, CPR Chart	

Module 11: Use of fire Extinguisher

Mapped to MIN/N1703, v1.0

Terminal Outcomes:

- Discuss different types of fires and their control mechanism.
- Demonstrate the steps for controlling different types of fires.

Duration: 04:00	Duration: 04:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Differentiate between different types of fires. • Explain the fire triangle. • Discuss all the three components in different types of fires. • Recall safety regulations and procedures in the event of fire hazards. • Discuss preventive measures to be taken in case of fire hazards. 	<ul style="list-style-type: none"> • Demonstrate the steps for checking the condition of various types of fire extinguishers. • Demonstrate the steps of operating various types of fire extinguishers. • Dramatize the support to control different types of fires in emergency.
Classroom Aids:	
LCD Projector, laptop/computer with internet, white board, Flip Chart, Markers	
Tools, Equipment and Other Requirements	
Various types of fire extinguisher, sand, water, Bucket, Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective jacket, Fire Extinguisher Cylinders	

Module 12: Health and Hygiene

Mapped to MIN/N1703, v1.0

Terminal Outcomes:

- Discuss importance of maintain personal and worksite hygiene.
- Demonstrate the process for disinfect the machine/tools/worksite and correct way of wearing and removing PPE's.

Duration: 04:00	Duration: 04:00
<p>Theory – Key Learning Outcomes</p> <ul style="list-style-type: none"> • Explain the importance for maintaining personal hygiene at worksite. • State the importance of identifying and reporting symptoms to the supervisor. • Discuss organizational hygiene and sanitation guidelines. • Explain the precautions to be taken against Infectious disease. • Identify the symptoms of any illness. 	<p>Practical – Key Learning Outcomes</p> <ul style="list-style-type: none"> • Demonstrate how to sanitize and disinfect one's allocated machine/tools/worksite before start any work /task. • Display correct way of wearing and removing PPE's. • Show how to wash hands with alcohol based sanitizers/soap properly. • Show how to maintain hygiene at the worksite. • Role-play of a situation on how to identify and report symptoms of illnesses, during the work or before coming to work.
<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>Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective jacket, sanitizers, soap, disinfectants</p>	

Module 13: Environmental safety

Mapped to MIN/N1703, v1.0

Terminal Outcomes:

- Demonstrate the various steps to maintain surrounding environment.
- Discuss the various steps for minimizing the environmental hazards caused due to various mining operations.

<i>Duration: 04:00</i>	<i>Duration: 04:00</i>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the ways to reduce environmental hazards caused due to related mining operations • List the common sources of pollution in the mines. • Recall the mine safety standards including light illumination level, noise levels, dust level, pollutants, etc. at the work-site • Explain the process of top soil removal and management. 	<ul style="list-style-type: none"> • Demonstrate the process of collecting, storing and disposing off the hazardous material and waste (like used oil, lubricant, battery, etc.) in compliance with worksite guidelines. • Exhibit the various processes to prevent mixing of topsoil with waste. • Demonstrate the washing steps of HEMM at the designated location. • Demonstrate the various activities to improve the productivity of the machine for material/fuel conservation. • Demonstrate the various mineral conservation practices described by the organization in accordance with MCDR-2017 (Mineral Conservation and Development Rules).
Classroom Aids:	
LCD Projector, laptop/computer, white board, Flip Chart, Markers	
Tools, Equipment and Other Requirements	
Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective Jacket, Safety Belt, Gum Boots, 5-S poster, Poster related to occupational health diseases	

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 dumper/tipper operations in the field of mining sector.	NA	-	-
OR						
ITI	Relevant trade	6	Relevant experience required in dumper/tipper operations in the field of mining sector.	NA	-	-
OR						
Diploma	Mining/ Mechanical	5	Relevant experience required in dumper/tipper operations in the field of mining sector.	NA	-	-
OR						
B-Tech	Mining/ Mechanical	4	Relevant experience required in dumper/tipper operations in the field of mining sector.	NA	-	-
OR						
CITS-NCIC	Machinist & Operator, Advance Machine Tool	1	Relevant experience in mining	NA	-	-

Trainer Certification	
Domain Certification	Platform Certification
MIN/Q1402, v2.0 Dumper/Tipper 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 dumper/tipper operations in the field of mining sector.	NA	-	-
OR						
ITI	Relevant trade	8	Relevant experience required in dumper/tipper operations in the field of mining sector.	NA	-	-
OR						
Diploma	Mining / Mechanical	7	Relevant experience required in dumper/tipper operations in the field of mining sector.	NA	-	-
OR						
B-Tech	Mining / Mechanical	6	Relevant experience required in dumper/tipper operations in the field of mining sector.	NA	-	-
OR						
CITS-NCIC	Machinist & Operator, Advance Machine Tool	1	Relevant experience in mining	NA	-	-

Assessor Certification	
Domain Certification	Platform Certification
MIN/Q1402, v2.0 Dumper/Tipper 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 are 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
NOS	National Occupational Standards
RE	Rare Earths
SIP	Skill India Portal
SOP	Standard Operating Procedure
SCMS	Skill Council for Mining Sector

