



# Model Curriculum

## Assistant Support – Opencast Mines

**SECTOR:** Mining  
**SUB-SECTOR:** Mining Operations  
**OCCUPATION:** Loading & Hauling – Opencast Mines  
**REF ID:** MIN/Q0211  
**NSQF LEVEL:** 2



  

# Certificate

**CURRICULUM COMPLIANCE TO  
QUALIFICATION PACK – NATIONAL OCCUPATIONAL  
STANDARDS**

Is hereby issued by the

**SKILL COUNCIL FOR MINING SECTOR**

for the

**MODEL CURRICULUM**

Complying to National Occupational Standards of  
Job Role/ Qualification Pack: '**Assistant Operator – Open cast**' QP No. '**MIN/ Q 0211 NSQF Level 2**'

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Date of Issuance: February 10<sup>th</sup>, 2017  
Valid up to\*: September, 9<sup>th</sup>, 2019

\* Valid up to the next review date of the Qualification Pack

  
Authorized Signatory  
(Skill Council) for Mining Sector



## TABLE OF CONTENTS

1. Curriculum	01
2. Trainer Prerequisites	09
3. Annexure: Assessment Criteria	10

# Assistant Support-Opencast Mines

## CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Assistant Support-Opencast Mines”, in the “Mining & Allied” Sector/Industry and aims at building the following key competencies amongst the learner.

<b>Program Name</b>	<b>Assistant Support – Opencast Mines</b>		
<b>Qualification Pack Name &amp; Reference ID.</b>	MIN/Q0211		
<b>Version No.</b>	1.0	<b>Version update date</b>	03-06-2017
<b>Pre-requisites to Training</b>	Class VIII Pass		
<b>Training Outcomes</b>	<p><b>After completing this programme, participants will be able to:</b></p> <ul style="list-style-type: none"> <li>• Assists in HEMM Operations, other equipment operations in ensuring positioning and productive operation of the HEMM and other extraction machinery used in opencast mines. Individual will assist the Operator / Fitter / Technician in operation of ancillary equipment, hoists and pumps etc.</li> <li>• Ensure the cleanliness and lubrication of the equipment, assists the operator and Technicians in pre operational checks and repair and maintenance jobs.</li> <li>• Become well versed with Environment Health &amp; Safety: Well versed with on-site occupational health and safety measures relating to blasting and use of personal protective equipment.</li> <li>• Identify and use basic tools, equipment &amp; materials: Understanding of carrying out welding of equipment's.</li> </ul>		

This course encompasses 3 out of 3 National Occupational Standards (NOS) of “Assistant Support-Opencast Mines” Qualification Pack issued by “Skill Council for Mining Sector”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p><b>Introduction</b></p> <p><b>Theory Duration</b> (hh:mm) 10:00</p> <p><b>Practical Duration</b> (hh:mm) 20:00</p> <p><b>Corresponding NOS Code</b> Bridge Module</p>	<p><u>Understanding of following:</u></p> <p>About Opencast Mining process. Regulatory context specified to work in opencast mines.</p> <ul style="list-style-type: none"> <li>Assists HEMM Operators, other equipment operators and Technicians in ensuring positioning and productive operation of the HEMM, loading, hauling &amp; transportation and other extraction machinery. Individual will assist the Operator / Fitter / Technician in operation of ancillary equipment, hoists and pumps etc. He has to ensure the cleanliness and lubrication of the equipment, assists the operator and Technicians in pre operational checks and repair and maintenance jobs.</li> <li>Receive and understand directions from operator and technicians, basic knowledge of risk and work safety, and finally physique to sustain strenuous condition.</li> <li>Assist Operators and Technicians in opencast Mining operation, in operation of mining machinery and in servicing and maintenance of varied machinery.</li> </ul>	<p>Projector System, Posters, Graph etc.</p>
2	<p><b>Assist in pre-operation checks and servicing of HEMM</b></p> <p><b>Theory Duration</b> (hh:mm) 20:00</p> <p><b>Practical Duration</b> (hh:mm) 70:00</p> <p><b>Corresponding NOS Code</b> MIN/N 0239</p>	<p>This OS unit is about providing necessary assistance to the HEMM operators in carrying out the pre operational checks on the machine, lubrication of the machine and to prepare the machine for operation. This unit covers:</p> <ul style="list-style-type: none"> <li>Assists in conducting the pre operational checks of the HEMM.</li> <li>Assist to identify the faults in machines, do routine maintained of HEMM.</li> <li>Assist technicians and operators in maintenance of other machinery.</li> <li>Assist in visual inspection of the body components for cracks and wear. Observe any unusual noise, vibration, leak, spillage, accumulation etc. and communicate the same to Technician / Operator.</li> <li>Inspect the bucket for any crack or damage. Inspect the tooth points and lock pin.</li> <li>Check the hydraulic oil levels, radiator water levels, any leakages</li> <li>Check the track chain pad, bolts and links in crawler mounted equipment. Tighten bolts as required.</li> <li>Check gauges, indicators, and sensor are fully functional. Observe any alarm message and report the same to Technician or Operator.</li> <li>Check for any leakage in compressor unit and all fittings and air lines. The condition of trailing cable and cable joints.</li> <li>Carry all the tools and tackles to complete the job.</li> <li>Clean the work area and assist the Technician in conducting inspection and check different machine area.</li> </ul>	<p>Projector System, Posters, Graph etc. Articulating Truck, Bulldozer, Cable/Hammer Tractor. Dragline, Drills, Haul Truck, Loaders, Motor Grader (mining size e.g. CAT 24H), Photo analysis, Quarry tub, Road header, Rock breaker, Mining lamp, Underground Personnel Carriers, Davy lamp, Dragline excavator, Drill floor, Drilling jumbo, Headboards, Footplates, Cone setting tools.</p> <p>Helmet, gloves, harness, earplugs, goggles, node mask.</p>

		<ul style="list-style-type: none"> <li>• Follow all the work instruction from Fitter / Technician related to routine maintenance.</li> <li>• Ensure that no maintenance task on the engine is performed when running or still hot.</li> <li>• Repair or replace faulty parts as per Technician or Operator's instructions.</li> <li>• Use various kinds of hand held and power-tools to lift, dismantle or assemble machine components.</li> <li>• Perform greasing &amp; lubrication as directed by Operator / Technician.</li> <li>• Assist in oil changes, change of oil filters and air filters, replaces hoses, belts, water pumps and other parts.</li> <li>• Check fan belts, hoses, wiper blades and other safety equipment; check water and antifreeze levels; check air in tires and inflate tires and changes tires as necessary.</li> <li>• Assist technician in maintaining and repairing automotive fleet and small equipment.</li> <li>• Change and repair tires for the automotive fleet and responds to road service calls. Tow broken-down vehicles.</li> <li>• Fuel, wash, and clean administrative vehicles, Assist in welding services as needed.</li> <li>• The user/individual on the job needs to know and understand:             <ul style="list-style-type: none"> <li>○ safety features of machine</li> <li>○ Should understand the work instructions</li> <li>○ Should know different greasing points in the equipment</li> <li>○ Should know the optimum level of water in radiator</li> <li>○ Should know the capacity of different oils in machine</li> <li>○ Should know the capacity of fuel tank in the machine</li> <li>○ Should know the basics of compressed air operated equipment</li> <li>○ Should know the basics of electrical driven equipment</li> <li>○ Knowledge on application of different types of hand tools</li> <li>○ Visual checks to identify damage, defects, cracks or leaks beforehand.</li> </ul> </li> </ul>	
3	<p><b>Assist in shifting and operation of the machine</b></p> <p><b>Theory Duration</b> (hh:mm) 20:00</p> <p><b>Practical Duration</b> (hh:mm) 75:00</p> <p><b>Corresponding NOS Code</b> MIN/N 0240</p>	<p>Providing necessary assistance to operator in shifting, placement, cleanliness and operation of machine at the place designated by the in charge. The task covers -</p> <ul style="list-style-type: none"> <li>• assist in shifting and placement of machine</li> <li>• provide necessary assistance during the operation of machine</li> <li>• Cleaning of machine.</li> <li>• Assist in varied other and extraction jobs</li> <li>• Follow the work instruction for shifting and placement of machine</li> <li>• Ensure that the path is free from any obstruction. Ensure that no blasting operation is in progress in the area to be shifted.</li> <li>• carry the trailing cable while placement of machine in case of electrical driven machines</li> <li>• Guide the operator for placement of drill machine at distinctly marked position given by Mechanic/Technician/ surveyor.</li> <li>• carry out visual inspection of the area before starting the operation</li> </ul>	<p>Projector System, Posters, Graph etc. Articulating Truck, Bulldozer, Cable/Hammer Tractor. Dragline, Drills, Haul Truck, Loaders, Motor Grader (mining size e.g. CAT 24H), Photo analysis, Quarry tub, Road header, Rock breaker, Mining lamp, Underground Personnel Carriers, Davy lamp, Dragline excavator, Drill floor, Drilling jumbo, Headboards, Footplates, Cone setting tools.</p> <p>Helmet, gloves, harness, earplugs, goggles, nose mask.</p>

		<ul style="list-style-type: none"> <li>• Inspect the unloading area properly for any persons or machinery before starting the dumping operation. ensure that the dumping area is free from cracks and subsidence</li> <li>• ensure that no person is present at the toe of unloading area</li> <li>• report any abnormality from the machine operation to the operator</li> <li>• Assist the operator in changing the rod of drill machines.</li> <li>• Clear the drill cuttings / muck whenever advised by the operator.</li> <li>• Perform water spraying on muck pile if in practice.</li> <li>• Clean the operator’s cabin. Clean the glasses of the operator cabins for better visibility before the start of machine in a shift</li> <li>• Clean the operator’s cabin. Clean the glasses of the operator cabins for better visibility before the start of machine in a shift.</li> <li>• Help operators, such as earth drillers, jack hammer and mining machine operators during the extraction process.</li> <li>• Assisting workers to extract geological materials, using hand tools and equipments.</li> <li>• Signaling workers to start extraction as per supervisors / operators’ Instructions.</li> <li>• The user/individual on the job needs to know and understand:             <ul style="list-style-type: none"> <li>○ Should be aware of the risk and risk management plan of the job</li> <li>○ Knowledge on working at height safety</li> <li>○ Basic knowledge of machine features</li> <li>○ Knowledge of code of practice for different operations</li> <li>○ Knowledge of health hazards and ergonomics</li> </ul> </li> </ul>	
4	<p><b>Health &amp; Safety:</b></p> <p><b>Theory Duration</b> (hh:mm) 10:00</p> <p><b>Practical Duration</b> (hh:mm) 25:00</p> <p><b>Corresponding NOS Code</b> MIN/N0901</p>	<ul style="list-style-type: none"> <li>• This unit provides the information regarding worksite health and safety. This unit is about adhering to health and safety requirements at the worksite during equipment operations.</li> <li>• Comply with occupational health and safety regulations adopted by the employer.</li> <li>• Follow mining operations procedures with respect to materials handling and accidents.</li> <li>• Comply with safety, health, security and environment related regulations / guidelines at the work site.</li> <li>• Use Personal Protective Equipment (PPE) and other safety gear such as seat belt, body protection, respiratory protection, eye protection, ear protection and hand protection.</li> <li>• Follow safety measures during operations to ensure that the health and safety of self or others (including members of the public) is not at risk.</li> <li>• Carry out operations as per the manufacturer’s and worksite related health and safety guidelines.</li> <li>• Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines.</li> <li>• Follow safety regulations and procedures with regard to worksite hazards and risks.</li> <li>• Operate various grades of fire extinguishers, as applicable.</li> <li>• Support in administering basic first aid and report to concerned team members, as required, in case of an accident.</li> </ul>	<p>Gloves, Safety shoes, Safety goggles, Safety helmet, Fire extinguisher, Types of log book, First Aid box.</p>

		<ul style="list-style-type: none"> <li>• Respond promptly and appropriately to an accident/ incident or emergency situation, within limits of your role and responsibility.</li> <li>• Record and report details related to operations, incidents or accidents, as applicable</li> <li>• Follow the manufacturer’s instructions for care and safe operation of the equipment.</li> <li>• Awareness about benching in quarries, dressing of overhangs, undercuts, fencing.</li> <li>• Uses of First aid and Hygiene.</li> <li>• Awareness of Code of traffic in specific areas of mine. Significance of fences.</li> <li>• Standing orders in force at the mine. Safety in the vicinity of Machinery.</li> <li>• Shot-firing and Safety regulations. How and where to take shelters? Knowledge of mining safety procedures.</li> <li>• Outcome of violation of safety procedures.</li> <li>• Locally prepared Emergency Preparedness / Disaster Management Plan.</li> <li>• Process for reporting any unsafe act/condition in work area which may endanger his or his colleague’s life.</li> <li>• Sources of dust, noise and vibration and measures to minimize.</li> <li>• Hazardous material safety and security rules and regulations as prescribed by DGMS.</li> <li>• In-depth knowledge of operation of the Jack Hammer and chipped materials flow.</li> <li>• Knowledge of technical and gallery training as per first schedule, Mining Vocational Training Rules (MVTR) 1966.</li> </ul>	
	<p><b>Total Duration</b></p> <p><b>Theory Duration</b> 60:00</p> <p><b>Practical Duration</b> 190:00</p>	<p><b>Unique Equipment Required:</b></p> <p>Projector System, Posters, Graph etc. Articulating Truck, Bulldozer, Cable/Hammer Tractor. Dragline, Drills, Haul Truck, Loaders, Motor Grader (mining size e.g. CAT 24H), Photo analysis, Quarry tub, Road header, Rock breaker, Mining lamp, Underground Personnel Carriers, Davy lamp, Dragline excavator, Drill floor, Drilling jumbo, Headboards, Footplates, Cone setting tools. Helmet, gloves, harness, earplugs, goggles, node mask.</p>	

Grand Total Course Duration: 250 Hours, 0 Minutes

(This syllabus/ curriculum has been approved by SSC: Skill Council for Mining Sector)



## Trainer Prerequisites for Job role: “Assistant Support – Opencast Mines” mapped to Qualification Pack: “MIN/Q0211”

Sr. No.	Area	Details
1	<b>Description</b>	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “MIN/Q0211”.
2	<b>Personal Attributes</b>	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused, eager to learn and keep oneself updated with the latest in the mentioned field.
3	<b>Minimum Educational Qualifications</b>	Class VIII Pass.
4a	<b>Domain Certification</b>	Statutory Certificate from Directorate General of Mines Safety (DGMS) for Job Role: “Assistant Support – Opencast Mines” mapped to QP: “MIN/Q0211”. Minimum accepted score for domain certification will be 80%.
4b	<b>Platform Certification</b>	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “MEP/Q0102”. Minimum accepted score for platform certification will be 80%.
5	<b>Experience</b>	Minimum 3 years of experience of working in opencast mines or in maintenance work like electrical / mechanical maintenance.

## Annexure: Assessment Criteria

<b>Assessment Criteria for Assistant Support – Opencast Mines</b>	
<b>Job Role</b>	<b>Assistant Support – Opencast Mines</b>
<b>Qualification Pack</b>	<b>MIN/Qo211</b>
<b>Sector Skill Council</b>	<b>Mining</b>

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2	The assessment of the theory/knowledge will be based on written test/viva-voce or both while skill test shall be hands on practical. Behavior and attitude will be assessed while performing the task.
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training Centre (as per assessment criteria given)
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training Centre based on these criteria.
5	To pass the Qualification Pack, every trainee should score a minimum of 50% in every NOS
6	In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

Assessment outcomes	Assessment Criteria for outcomes	Total Mark (100)	Out Of	Marks Allocation	
				Theory	Skills Practical
		<b>100</b>	<b>100</b>	<b>30</b>	<b>70</b>
1. MIN/N0239: Assist in pre-operational check, servicing of HEMM	PC1. Assist in visual inspection of the body components for cracks and wear. Observe any unusual noise, vibration, leak, spillage, accumulation etc. and communicate the same to Technician / Operator.	<b>40</b>	3	2	1
	PC2. Inspect the bucket for any crack or damage. Inspect the tooth points and lock pin.		2	1	1
	PC3. Check the hydraulic oil levels, radiator water levels, any leakages		3	2	1
	PC4. Check the track chain pad, bolts and links in crawler mounted equipment. Tighten bolts as required.		2	1	1
	PC5. Check gauges, indicators, and sensor are fully functional. Observe any alarm message and report the same to Technician or Operator.		2	1	1
	PC6. Check for any leakage in compressor unit and all fittings and air lines. The condition of trailing cable and cable joints.		2	1	1
	PC7. Carry all the tools and tackles to complete the job.		2		2
	PC8. To clean the work area and assist the Technician in conducting inspection and check different machine area.		3	1	2
	PC9. Follow all the work instruction from Fitter / Technician related to routine maintenance.		1	1	0
	PC10. Ensure that no maintenance task on the engine is performed when running or still hot.		1	0	1

	PC11. Repair or replace faulty parts as per Technician or Operator's instructions.		2	1	1
	PC12. Use various kinds of hand held and power-tools to lift, dismantle or assemble machine components.		2	1	1
	PC13. Perform greasing & lubrication as directed by Operator / Technician.		3	1	2
	PC14. Assist in oil changes, change of oil filters and air filters, replaces hoses, belts, water pumps and other parts.		3	1	2
	PC15. Check fan belts, hoses, wiper blades and other safety equipment; check water and antifreeze levels; check air in tires and inflate tires and changes tires as necessary.		3	1	2
	PC16. Assist technician in maintaining and repairing automotive fleet and small equipment		2	1	1
	PC17. Change and repair tires for the automotive fleet and responds to road service calls. Tow broken-down vehicles.		2	1	1
	PC18. Fuel, wash, and clean administrative vehicles.		1	0	1
	PC19. Assist in welding services as needed.		1	0	1
			<b>40</b>	<b>17</b>	<b>23</b>
2. MIN/N0240: Assist Mining operators in shifting, placement, cleanliness and operation of the machine.	PC1. Follow the work instruction for shifting and placement of machine.	<b>40</b>	2	1	1
	PC2. Ensure that the path is free from any obstruction. Ensure that no blasting operation is in progress in the area to be shifted.		2	1	1
	PC3. carry the trailing cable while placement of machine in case of electrical driven machines		2	1	1
	PC4. Guide the operator for placement of drill machine at distinctly marked position given by Mechanic/Technician/surveyor.		2	1	1
	PC5. carry out visual inspection of the area before starting the operation		3	1	2
	PC6. Inspect the unloading area properly for any persons or machinery before starting the dumping operation. Ensure that the dumping area is free from cracks and subsidence.		2	1	1
	PC7. ensure that no person is present at the toe of unloading area		2	0	2
	PC8. report any abnormality from the machine operation to the operator		3	2	1
	PC9. Assist the operator in changing the rod of drill machines.		3	1	2
	PC10. Clear the drill cuttings / muck whenever advised by the operator.		3	1	2
	PC11. Perform water spraying on muck pile if in practice.		3	1	2
	PC12. Clean the operator's cabin. Clean the glasses of the operator cabins for better visibility before the start of machine in a shift		2	0	2
	PC13. Clean the foot plates, pedals and steps free from mud, dirt, oil, grease, ice and snow at regular intervals. Perform periodic cleaning of the entire machine.		2	1	1

	PC14. Help operators , such as earth drillers, jack hammer and mining machine operators during the extraction process;		3	1	2
	PC15. Assisting workers to extract geological materials, using hand tools and equipment;		2	1	1
	PC16. Signalling workers to start extraction as per supervisors / operators' instructions;		2	1	1
	PC17. Delivery and set-up of materials, devices and machine parts, using hand tools;		2	0	2
			<b>40</b>	<b>16</b>	<b>24</b>
MIN / N0901: Worksite Health & Safety	PC1. Comply with occupational health and safety regulations adopted by the employer.	<b>20</b>	2	1	1
	PC2. Follow mining operations procedures with respect to materials handling and accidents.		2	1	1
	PC3. Follow the correct safety steps in case of accident or major failure.		2	1	1
	PC4. Comply with safety regulations and procedures in case of fire hazard.		2	0	2
	PC5. Operate various grades of fire extinguishers.		2	1	1
	PC6. Work responsibly and as safe and careful as possible so as not to put the health and safety of self or others at risk, including members of the public		2	1	1
	PC7. Perform storage and transport of hazardous materials compliant with safety guidelines prescribed by DGMS.		2	0	2
	PC8. Deal with misfires as per statutory requirement		1	1	0
	PC9. Identify characteristics of post-blast fumes and take necessary precautions.		2	1	1
	PC10. Wears safety gear such as hard hat, respiratory protection, eye protection, ear protection.		1	0	2
	PC11. Follow the manufacturer's instructions for care and safe operation of the equipment.		1	0	1
	<b>Total</b>		<b>20</b>	<b>7</b>	<b>13</b>
	<b>QP Total</b>		<b>100</b>	<b>40</b>	<b>60</b>
	<b>Percentage Weightage:</b>			<b>40%</b>	<b>60%</b>
	<b>Minimum Pass% to qualify (aggregate):</b>				<b>50%</b>