



Model Curriculum

QP Name: Backhoe Loader Operator

QP Code: MIN/IES/Q0101

QP Version: 1.0

NSQF Level: 4

Model Curriculum Version: 1.0

Model Curriculum

Backhoe Loader Operator

SECTOR: INFRASTRUCTURE
SUB-SECTOR: EQUIPMENT
EQUIPMENT OPERATIONS
OCCUPATION: OPERATOR
REF. ID: IES /Q0101 VERSION 1.0
NSQF LEVEL: 4



Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

INFRASTRUCTURE EQUIPMENT SKILL COUNCIL

for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: **'Backhoe Loader Operator'** QP No. **'IES/Q 0101 NSQF Level 4'**

Date of Issuance: December 30th, 2015

Valid up to: March 31st, 2017



Authorised Signatory
(Infrastructure Equipment Skill Council)

TABLE OF CONTENTS

1. Curriculum	01
2. Trainer Prerequisites	06
3. Annexure: Assessment Criteria	07

Backhoe Loader Operator

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Backhoe Loader Operator”, in the “Infrastructure Equipment” Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Backhoe Loader Operators Course		
Qualification Pack Name & Reference ID.	IES/Q0101		
Version No.	1.0	Version Update Date	30-12 -2015
Pre-requisites to Training	<ul style="list-style-type: none"> • Preferably Class VIII • Certification Training in Backhoe Loader Operations preferred • Must have valid Heavy Commercial Vehicle (HCV) Driving License • In lieu of minimum qualification, should have 2 year experience in operating backhoe loader • <i>Technical and gallery training as per first schedule, Mining Vocational Training Rules (MVTR) 1966, if working in the mining area under DGMS</i> 		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Carry out pre-operation checks for backhoe loader operations. General introduction to backhoe loader machine, basic working of engine, hydraulic and electrical systems, operational controls and instrument panel, preparing machine for operations • Operate a backhoe loader. Starting of backhoe loader, proceeding to worksite and carrying out earth digging, load lifting and dumping; parking and shutting down the machine; post-operative checks • Carry out maintenance and troubleshooting of backhoe loader. General maintenance procedures and periodic service schedule; common faults and their diagnosis; reports and documents. • Comply with worksite health and safety guidelines. Health, safety and environment policies; personal protective equipment, fire-fighting equipment, basic first aid for common injuries at work site 		

This course encompasses 4 out of 4 National Occupational Standards (NOS) of “Backhoe Loader Operator” Qualification Pack issued by “SSC: Infrastructure Equipment Skill Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p>Pre-operation Checks</p> <p>Theory Duration (hh:mm) 08:00</p> <p>Practical Duration (hh:mm) 20:00</p> <p>Corresponding NOS Code IES/N 0101</p>	<p>Organisational Context:</p> <ul style="list-style-type: none"> Organisation structure, reporting and escalation line. Performance standards and procedures in the company. Work target and review mechanism with supervisor Location and process for storage and disposal of waste. <p>Technical Knowledge:</p> <ul style="list-style-type: none"> Basic working of engine and all systems; hydraulic & electrical. Controls, levers, switches and instrument panel & fuse box Various hand signals and safety & emergency signs at work site. Procedure for filling and topping up of fuel, coolant, oils Method of greasing and lubrication. Optimal working condition of components and monitoring systems <p>Skills - Core & Professional</p> <ul style="list-style-type: none"> Read & understand general instructions/guidelines related to equipment & worksite ops. Write and record any incidents & deviations on the prescribed formats. Orally communicate information & instructions to co-workers in a clear and concise manner. Plan and organise work related tasks with all concerned in most efficient and cost effective way. <p>Performance Criteria:</p> <p>Examine the machine to ensure there are no cracks and dents in the body work and weld joints.</p> <ul style="list-style-type: none"> Check all fluid levels in the engine, transmission & hydraulic systems; top up where necessary Inspect air filters and gaskets; clean and empty dust bowls Drain water sediments in the fuel system Check battery electrolyte levels and terminal tightness. Check tension of fan belt and compressor belt if fitted 	<ul style="list-style-type: none"> BHL Machine with standard tools and equipment. Class room with audio-video system Manufacturers O and M video & Manual Safety video PPE Items <u>Open ground</u>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> Inspect all greasing points and pivots and ensure lubrication Check footplates and steps are free of mud and oil spills. Check and adjust seat, belt, & mirrors for operating efficiency Check all controls, gauges, lights and horns are functional 	
2	<p>Operate a Backhoe Loader</p> <p>Theory Duration (hh:mm) 30:00</p> <p>Practical Duration (hh:mm) 75:00</p> <p>Corresponding NOS Code IES/N0102</p>	<p>Organisational Context</p> <ul style="list-style-type: none"> Responsibilities and time frame for assigned jobs. Emergency organisation and reporting channel work site. Equipment costs and delay implications to company. Location and process for storage and disposal of waste. Work target and performance review mechanism with supervisor. <p>Technical Knowledge</p> <ul style="list-style-type: none"> Besides technical knowledge related to pre-op checks should know Different attachments, their usage and functions. <p>Skills - Core & Professional</p> <ul style="list-style-type: none"> In addition to core and generic skills listed above Interpret signage on road and at work site operations correctly. Use correct terminology while interacting with others at site Plan work schedule in time bound and cost effective way. Identify operational slow-downs and take timely remedial action. <p>Performance Criteria.</p> <ul style="list-style-type: none"> Backhoe Start - up: After carrying out all pre- checks start machine as laid down; proceed to work site Inspect work site and plan ops; also identify problem areas. Earth Digging: Prepare worksite and determine correct start point to commence digging Operate the machine; modifying techniques to suit changing work conditions. Load Lifting & Dumping: Position machine correctly to lift load safely & ensuring stability. 	<ul style="list-style-type: none"> <u>BHL Machine</u> with standard tools and equipment. Class room with audio-video system Manufacturers O and M video & Operation Manual Safety video PPE Items <u>Open ground</u>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> Shift and dump load safely; using correct hand and communication signals. Backhoe Shutdown: Move and park the machine in garage; shut down as per procedure. Inspect for damages; leaks etc and report / take appropriate action as laid down. 	
3	<p>Carry out Maintenance and Trouble Shooting of Backhoe Loader</p> <p>Theory Duration (hh:mm) 14:00</p> <p>Practical Duration (hh:mm) 35:00</p> <p>Corresponding NOS Code IES/N0103</p>	<p>Organisational Context:</p> <ul style="list-style-type: none"> Organisation structure and maintenance policy. Location of special tools and equipment/ accessories. <p>Technical Knowledge</p> <ul style="list-style-type: none"> Maintenance and service Schedule Common defects and general causes for breakdown. <p>Skills - Core & Professional</p> <ul style="list-style-type: none"> In addition to core and generic skills listed above; Plan maintenance & servicing keeping op needs in mind. <p>Performance Criteria</p> <ul style="list-style-type: none"> Routine Maintenance: Clean machine outside and inside Clean air filter, replenish lubes and coolants as necessary Grease all pins and pivot points daily. Check battery electrolyte levels and terminals Check tyre pressure and wheel nuts for tightness. Basic Trouble Shooting: Place machine correctly and safely using supports as necessary. Diagnose the defect/ problem and rectify; if need be seek advice from supervisor. Reporting & Documentation: Ensure documentation on prescribed formats completed in time. Report defects and problems in time and escalate as necessary 	<ul style="list-style-type: none"> <u>BHL Machine</u> with standard tools and equipment. Class room with audio-video system Manufacturers O and M video, Maintenance Manual & Chart Safety video PPE Items <u>Lab /workshop</u>
4	<p>Comply with Worksite Health and Safety Guidelines</p> <p>Theory Duration (hh:mm) 08:00</p> <p>Practical Duration</p>	<p>Organisational Context</p> <ul style="list-style-type: none"> Health, safety, environmental (HSE) policies and guidelines of the company & their importance Contact details of personnel responsible for HSE related matters & in case of emergencies. <p>Technical Knowledge</p> <ul style="list-style-type: none"> OEMs guidelines for health, safety and 	<ul style="list-style-type: none"> <u>BHL Machine</u> with standard tools and equipment. Class room with audio-video system. Company's ESH video. PPE Items & Safety Gear. <u>Firefighting Eqpt.</u> <u>First Aid Kit.</u>

Trainer Pre-requisites for Job role: “Backhoe Loader Operator” Mapped to Qualification Pack: “IESC/Q0101 Version 1.0”

Sr. No.	Area	Details
1	Description	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “IES/Q0101 Version 1.0”.
2	Personal Attributes	Aptitude for conducting training, with strong communication and interpersonal skills. Passion for training and developing others; well-organised; and a team player. Eager to learn and keep oneself updated with the latest in the mentioned field.
3	Minimum Educational Qualifications	Class 8 th . Desirable Class 10 th
4a	Domain Certification	Certified for Job Role: “ <u>Backhoe Loader Operator</u> ” mapped to QP: “ <u>IES/Q0101 – Version 1.0</u> ”. Minimum accepted score 70%. Desired: Certification Training in Backhoe Loader Operations
4b	Platform Certification	Certified for Job Role: “ <u>Backhoe Loader Trainer</u> ” mapped to Qualification Pack: SSC/Q1402. Minimum accepted score 70%.
5	Experience	<ul style="list-style-type: none"> • Around 3 to 4 year’s site experience in backhoe loader operations. • Desirable: Should have conducted O and M programs at work sites.

Annexure: Assessment Criteria

Assessment Criteria for Backhoe Loader Operator	
Job Role	Backhoe Loader Operator
Qualification Pack	IES/Q0101 Version 1.0
Sector Skill Council	Infrastructure Equipment

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for Qualification Pack has been laid down based on the NOS's. Each Performance Criteria (PC) has been assigned marks proportional to its importance within NOS and weightages have also been given among the NOSs accordingly.
2	The assessment of the theory/knowledge will be based on written test/viva or both while skill test shall be hands on practical. Behaviour and attitude will be assessed while performing the assigned task.
3	The assessment shall be done as per the guidelines formulated by IESC. The assessment agencies in consultation with IESC will create unique question papers for theory/knowledge and practical skills at each IESC accredited testing centres (as per assessment criteria below)
4	To pass the Qualification Pack, every trainee should score a minimum of 40% in each NOS and 60% aggregate. 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.

NOS	PC	Total Mark	Out of	Marks Allocation	
				Theory	Skills Practical
	PC20. Report defects precisely to the supervisor if beyond scope of his role		3	0	3
		Total	50	19	31
2. IES/N0102 Operate a backhoe loader	PC1. Plan and organize the job according to given instructions	50	2	0	2
	PC2. Inspect the worksite to identify and loose soil, hidden deep trenches or marshy patches where a backhoe could get stuck		2	2	0
	PC3. Prepare worksite ahead of operations in accordance of equipment operations		2	2	0
	PC4. Carry out all pre-use and running checks		2	0	2
	PC5. Ensure gear is on neutral position		2	2	0
	PC6. Wear seatbelt and adjust seat position		2	0	2
	PC7. Start the engine using the pushbutton switch and key switch together		2	2	0
	PC8. Use the priming pump and pre-heater to start the engine in cold weather conditions		2	2	0
	PC9. Select appropriate attachment as per the job requirement		1	0	1
	PC10. Determine speed and direction of machine, as per the specified function		1	1	0
	PC11. Use the emergency stop button to disable all power to the backhoe loader in case of a crisis, as per operator manual		1	0	1
	PC12. Ascertain the right location to begin operations		1	1	0
	PC13. Establish weight of load and ensure it is within safe operational limits of the machine		2	0	2
	PC14. Continually monitor hazards and risks , and ensure safety of self, other personnel, plant and equipment		1	1	0
	PC15. Drive and operate machine, and modify the operating technique to meet changing work conditions		1	1	0
	PC16. Effectively use stabilizers to ensure the machinery is completely immobile while digging		2	0	2
	PC17. Select, attach and apply slings and lifting gear in accordance with safe working load requirements		1	1	0
	PC18. Position and locate machinery to ensure stability to effectively shift materials according to job specifications		2	0	2
	PC19. Shift load safely and effectively		1	1	0
	PC20. Move load using hand/audible/communication signals		2	0	2
	PC21. Turn off ignition after finishing operations		2	2	0
	PC22. Ensure gear is in neutral position post usage		2	2	0
	PC23. Idle the equipment for a few minutes post		2	0	2

				Marks Allocation	
NOS	PC	Total Mark	Out of	Theory	Skills Practical
	qualified and competent personnel				
	PC14. Diagnose the problem		2	2	0
	PC15. Handle and dispose waste based on environmental guidelines at the work place		4	0	4
	PC16. Follow reporting procedures as laid down by the employer		2	2	0
	PC17. Complete all documentation in the prescribed standards in a timely manner		4	0	4
	PC18. Report and escalate problems/ incidents as required in a timely manner		2	2	0
	PC19. Report defects precisely to the supervisor if beyond scope of his role		2	0	2
	Total		50	20	30
4. IES/N7601 Comply with worksite health and safety guidelines	PC1. Comply with safety, health, security and environment related regulations/ guidelines at the work site	50	5	5	0
	PC2. Use Personal Protective Equipment (PPE) and other safety gear such as seat belt, body protection, respiratory protection, eye protection, ear protection and hand protection		5	0	5
	PC3. 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		6	6	0
	PC4. Carry out operations as per the manufacturer's and worksite related health and safety guidelines		6	0	6
	PC5. Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines		6	0	6
	PC6. Follow safety regulations and procedures with regard to worksite hazards and risks		6	0	6
	PC7. Operate various grades of fire extinguishers, as applicable		6	6	0
	PC8. Support in administering basic first aid and report to concerned team members, as required, in case of an accident		5	0	5
	PC9. Respond promptly and appropriately to an accident/ incident or emergency situation, within limits of your role and responsibility		5	0	5
	Total		50	17	33



Infrastructure Equipment Skill Council

23-29, FF5, First Floor, "White House Building" St. Marks Road, (Opp SBI) Bengaluru - 560001