

Model Curriculum

Wheel Loader Operator

Operators Course

SECTOR: **Infrastructure Equipment**
SUB-SECTOR: **Equipment Operations**

OCCUPATION: **Operator**
REFERENCE ID: **IES /Q0105 Version 1.0**
NSQF LEVEL: **4**

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Wheel Loader Operator

CURRICULUM / SYLLABUS

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

Program Name	Wheel Loader Operators Course		
Qualification Pack Name & Reference ID.	IES/Q 0105		
Version No.	1.0	Version Update Date	31-03-2016
Pre-requisites to Training	<ul style="list-style-type: none"> • Preferably Class VIII • Certification Training in Wheel Loader Operations preferred • Must have valid Heavy Commercial Vehicle (HCV) Driving License • In lieu of minimum qualification, should have 2 years’ experience in operating wheel 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 on wheel loader. General introduction to wheel loader machine, basic working of engine, hydraulic and electrical systems, operational controls and instrument panel, preparing machine for operations • Operate a wheel loader. Starting of wheel loader, proceeding to worksite and carrying out loading and dumping; parking and shutting down the machine; post-operative checks • Carry out maintenance and troubleshooting of wheel 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 “Wheel Loader Operator” Qualification Pack issued by “SSC: Infrastructure Equipment Skill Council”.

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
1	Pre-operation Checks	08:00	20:00	<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, transmission & steering mechanism • 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, lubes & coolants. • Procedure for cleaning air filter elements & draining water sediments. • Method of greasing and lubrication. • Optimal working condition of components and monitoring systems • Procedure for adjustment of driving position, seat belts and rear- view mirrors. <p>Skills - Core & Professional</p> <ul style="list-style-type: none"> • Read & understand general instructions/ guidelines related to equipment & worksite ops. 	IES/N 0113	<ul style="list-style-type: none"> • <u>Wheel Loader Machine</u> 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>

			<ul style="list-style-type: none"> • 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> <ul style="list-style-type: none"> • Examine the machine to ensure there are no cracks and dents in the body work and weld joints. • 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 • 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 • Maintain log book to record all activities carried out. 		
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2	Operate a Wheel Loader	30:00	68:00	<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 types of wheel loaders and their applications. Methodology for lifting loads safely; load chart Methodology for moving with loads; steering on slopes, both uphill and downhill. Methodology for dumping/discharging load. Procedure for parking and shutting down <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. 	IES/N0114	<ul style="list-style-type: none"> <u>Wheel Loader 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>
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				<ul style="list-style-type: none"> Identify operational slow-downs and take timely remedial action. <p>Performance Criteria.</p> <ul style="list-style-type: none"> Wheel Loader 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. Load lifting & dumping. Lift and secure loads as per load chart Move slowly to dump site & discharge load safely as per instructions Wheel Loader 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. Reporting & Documentation: Ensure documentation on prescribed formats completed in time. Report defects and problems in time and escalate as necessary 		
3	Carry out Maintenance and Trouble Shooting of Wheel Loader	11:00	27:00	<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. 	IES/N 0115	<ul style="list-style-type: none"> <u>Wheel Loader 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

				<p>Skills - Core & Professional</p> <ul style="list-style-type: none"> In addition to core and generic skills listed above; Plan maintenance & servicing keeping operational needs in mind. <p>Performance Criteria</p> <ul style="list-style-type: none"> Routine Maintenance: Assess right service schedule as per machine operating hours 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>Lab /workshop</u>
4	Comply with Worksite Health and Safety Guidelines	08:00	20:00	<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 	IES/N7601	<ul style="list-style-type: none"> <u>Wheel Loader Machine</u> with standard tools and equipment. Class room with audio-video system.

				<p>HSE related matters & in case of emergencies.</p> <p>Technical Knowledge</p> <ul style="list-style-type: none"> • OEMs guidelines for health, safety and security requirements. • Types, use and importance of Personal Protective Equipment (PPE) • Types of common hazards and risks at worksite and preventive measures. • In case of emergencies procedure to stop/ shut down machinery. • Common injuries and appropriate basic first aid treatment. • Fire-fighting equipment: Basic knowledge of handling and using them. <p>Skills - Core & Professional</p> <ul style="list-style-type: none"> • In addition to the core and generic skills listed above • Use correct PPE and other safety gear at work site. <p>Performance Criteria</p> <ul style="list-style-type: none"> • Comply with safety, health, environment and security related regulations & guidelines at work. • Correct use of Personal Protective Equipment (PPE) and other safety gear at work site. • Follow safety measures during operations to ensure health and safety of self and others, general public not at risk. • Operate fire extinguishers as applicable. • Support in administering basic first aid. 	<ul style="list-style-type: none"> • Company's ESH video. • PPE Items & Safety Gear. • <u>Firefighting Eqpt.</u> • <u>First Aid Kit.</u> • <u>Open ground.</u>
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				<ul style="list-style-type: none"> Record and report details as related to operations, incidents or accidents as applicable. 		
Total Duration:	<u>57:00</u>	<u>135:00</u>	Unique Equipment Required: <ul style="list-style-type: none"> <u>Wheel Loader Machine</u> with standard tools and equipment. Class room with audio-video projection system Manufacturers O and M video & Manual Safety video PPE Equipment: Helmet, gloves, harness, earplugs, goggles, mask Firefighting equipment First Aid Box and Charts <u>Open ground</u> and Lab/workshop 			

Grand Total Course Duration: **192 Hours, 0 Minutes**

*(This syllabus/ curriculum has been approved by **SSC: Infrastructure Equipment Skill Council**)*

Annexure1: Assessment Criteria

Assessment Criteria for Wheel Loader Operator	
Job Role	Wheel Loader Operator
Qualification Pack	IES/Q0105 Version 1.0
Sector Skill Council	Infrastructure Equipment

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 for the theory part will be based on knowledge bank of questions created by the SSC
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria)
4	Individual assessment agencies will create unique evaluation for skill practical for every student at each examination/training centre based on this criteria
5	To pass the Qualification Pack, every trainee should score a minimum of 50% aggregate
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

				Marks Allocation	
NOS	Performance Criteria	Total Marks	Out Of	Theory	Skills Practical
1. IES/N0113 Carry out pre-operation checks on wheel loader	PC1. Visually inspect the body components for cracks and bearing wear	46	4	1	3
	PC2. Inspect the tires, wheels, lug nuts, stem caps for inflation, leaks or damage		4	1	3
	PC3. Check the bucket cutting edge and the lift for excessive damage		3	0	3
	PC4. Check the mould board, tilt cylinders, lines, hoses for leakage or damage		4	1	3
	PC5. Ensure that the loader frame and arms are not damaged		1	0	1
	PC6. Ensure that the transmission, fuel tank, axles and hydraulic tanks do not have any damage or leakage		2	1	1

	PC7. Check that oil levels of engine, hydraulic tank, fuel tank, transmission, radiant coolant and brake are as per manufacturer's indicators	3	0	3
	PC8. Top up coolant, differential and final drive oil and oil in engine, transmission, hydraulic tank etc if necessary as per manufacturer's indicators	4	1	3
	PC9. Recharge batteries periodically	2	1	1
	PC10. Drain moisture from air tanks in case it is equipped with air brakes	2	0	2
	PC11. Conduct checks to ensure proper condition of parking brake, main horn, reverse horn and head light	2	0	2
	PC12. Conduct visual inspection to check the various controls, gauges, warning lamp and other safety devices	2	0	2
	PC13. Check and adjust driving position, rear and side mirrors, seat belts and set them as per comfort level	4	1	3
	PC14. Clean air filter dust bowls and check the gasket and inner filter	1	0	1
	PC15. Drain water and sediment from the fuel tank	3	0	3
	PC16. Ensure that all greasing pins and pivots points are appropriately greased	1	0	1
	PC17. Ensure that no one is under or on the machine before operating	1	0	1
	PC18. Ensure that all the safety and maintenance decals are available on the machine	1	0	1
	PC19. Maintain a checking/maintenance logbook to record all activities performed before starting the wheel loader	1	0	1

	PC20. Report defects precisely to the supervisor if beyond scope of his role		1	0	1
		Total	46	7	39
2. IES/N0114 Operate a wheel loader	PC1. Plan and organize the job according to given instructions	60	1	0	1
	PC2. Inspect the worksite to identify and loose soil, hidden deep trenches or marshy patches where a wheel loader could get stuck		4	1	3
	PC3. Carry out all pre-use and running checks		3	0	3
	PC4. Wear seatbelt and adjust seat position		4	1	3
	PC5. Start the engine using ignition switch		3	0	3
	PC6. Use the priming pump and pre-heater to start the engine in cold weather conditions		1	0	1
	PC7. Determine speed and direction of machine, as per the specified function		1	0	1
	PC8. Use the emergency stop button to disable all power to the wheel loader in case of a crisis, as per operator manual		1	0	1
	PC9. Move levers or controls that operate lifting devices, such as forklifts, lift beams with swivel-hooks, hoists, or elevating platforms, to load, unload, transport, or stack material.		4	1	3
	PC10. Inspect product load for accuracy and confirm with the supervisor		1	0	1
	PC11. Establish weight of load and ensure that it is within safe operational limits of the machine		1	0	1
	PC12. Position material under, over, or around loaded pallets, skids, or boxes and as per job description and safety measures		1	0	1

	PC13. Secure material for transport to designated areas, as per supervisor's directions	1	0	1
	PC14. Safely move load around the facility to ensure timely and complete delivery.	1	0	1
	PC15. Move controls to drive equipment to transport materials between loading, processing, and storage areas.	2	1	1
	PC16. Signal workers to discharge, dump, or level materials when required, as per requirement	1	0	1
	PC17. Hook tow trucks to trailer hitches and fasten attachments, such as graders, ploughs, rollers, or winch cables to tractors, using hitch pins as per SOP	4	1	3
	PC18. Turn valves and open chutes to dump, spray, or release materials from dump cars or storage bins into hoppers.	3	0	3
	PC19. Estimate the appropriate amount of load to be loaded on the wheel loader to prevent over loading the machine during operations	3	0	3
	PC20. Turn off ignition after finishing operations	1	0	1
	PC21. Ensure gear is in neutral position post usage	3	0	3
	PC22. Idle the equipment for a few minutes post the usage	3	0	3
	PC23. Remove attachments after use	3	0	3
	PC24. Clean and store removed attachments	2	1	1
	PC25. Ensure that the machine is shut down and secured when left unattended	1	0	1
	PC26. Operate the machine in 'limp back' mode in case of equipment malfunction, based on the instructions in the operator's manual	3	0	3

	PC27. Follow reporting procedures as laid down by the employer		1	0	1
	PC28. Complete all documentation in the prescribed standards in a timely manner		1	0	1
	PC29. Report and escalate problems/incidents as required in a timely manner		1	0	1
	PC30. Report defects precisely to the supervisor if beyond scope of his role		1	0	1
		Total	60	6	54
3. IES/N0115 Carry out maintenance and troubleshooting on the wheel loader	PC1. Assess the right service schedule by tracking machine operating hours	34	2	1	1
	PC2. Clean air filter dust bowls at regular intervals		3	0	3
	PC3. Clean footplates, pedals and steps free from mud, dirt, ice and snow at regular intervals		4	1	3
	PC4. Replenish coolants, lubricants and fluids everyday		1	0	1
	PC5. Grease all greasing pins and pivot points everyday		1	0	1
	PC6. Check battery levels and condition of the terminals and carry out minor adjustments if required		3	0	3
	PC7. Check and maintain the tire rims, air pressure, wheel nits and treads as per manufacturer's indicators		3	0	3
	PC8. Ensure the machine is on firm and level ground before attempting to carry out any maintenance; track machine operating hours to assess the right service schedule		4	1	3
	PC9. Complete timely and legibly daily/ weekly maintenance sheets as provided by the company		1	0	1

	PC10. Ensure that suitable props/support devices are used and the bucket is not raised while performing maintenance		1	0	1
	PC11. Ensure that no maintenance task on the engine is performed when running or still hot		1	0	1
	PC12. Assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel		2	1	1
	PC13. Diagnose the problem		1	0	1
	PC14. Handle and dispose waste based on environmental guidelines at the work place		1	0	1
	PC15. Follow reporting procedures as laid down by the employer		1	0	1
	PC16. Complete all documentation in the prescribed standards in a timely manner		2	1	1
	PC17. Report and escalate problems/incidents as required in a timely manner		1	0	1
	PC18. Report defects precisely to the supervisor if beyond scope of his role		2	1	1
		Total	34	6	28
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	20	2	1	1
	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		4	1	3
	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		4	1	3

	PC4. Carry out operations as per the manufacturer's and worksite related health and safety guidelines		1	0	1
	PC5. Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines		2	1	1
	PC6. Follow safety regulations and procedures with regard to worksite hazards and risks		2	1	1
	PC7. Operate various grades of fire extinguishers, as applicable		2	1	1
	PC8. Support in administering basic first aid and report to concerned team members, as required, in case of an accident		1	0	1
	PC9. Respond promptly and appropriately to an accident/ incident or emergency situation, within limits of your role and responsibility		1	0	1
	PC10. Record and report details related to operations, incidents or accidents, as applicable		1	0	1
		Total	20	6	14

Annexure2
Trainer Pre-requisites for Job role: “Wheel Loader Operator”
Mapped to Qualification Pack: “IESC/Q0105 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 <u>“IES/Q0105 Version 1.0”</u> .
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>“Wheel Loader Operator”</u> mapped to QP: <u>“IES/Q0105 – Version 1.0”</u> . Minimum accepted score 70%. Desired: Certification Training in Wheel Loader Operations
4b	Platform Certification	Certified for Job Role: <u>“Wheel Loader Trainer”</u> mapped to Qualification Pack: SSC/1402. Minimum accepted score 70%.
5	Experience	<ul style="list-style-type: none"> • Around 3 to 4 year’s site experience in wheel loader operations. • Desirable: Should have conducted O and M programs at work sites.



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: 'Wheel Loader Operator' QP No. 'IES/Q 0105 NSQF Level 4'

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Authorised Signatory
(Infrastructure Equipment Skill Council)



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