







Model Curriculum

Agriculture Machinery Repair and Maintenance Service Provider

SECTOR: AGRICULTURE & ALLIED

SUB-SECTOR: AGRICULTURE CROP PRODUCTION

OCCUPATION: FARM MACHINERY EQUIPMENT OPERATION &

MAINTENANCE

REF ID: AGR/Q1111, V1.0

NSQF LEVEL: 5















Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

AGRICULTURE SKILL COUNCIL OF INDIA

forthe

MODEL CURRICULUM

Complying to National Occupational Standards of Job Role/Qualification Pack: '<u>Agriculture Machinery Repair and Maintenance Service Provider</u>'

QP No. '<u>AGR/Q1111 NSQF Level 5</u>'

Date of Issuance: April 24th, 2017

Valid up to: March 31st, 2020

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

Authorised Signatory (Agriculture Skill Council of India)









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Agriculture Machinery Repair and Maintenance Service Provider

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a "<u>Agriculture Machinery Repair and Maintenance Service Provider</u>", in the "<u>Agriculture & Allied</u>" Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Agriculture Machinery Repair and Maintenance Service Provider			
Qualification Pack Name & Reference ID.	AGR/Q1111, v1.0			
Version No.	1.0	Version Update Date		
Pre-requisites to Training	Class12, preferably			
Training Outcomes	 Identify the im Establish a fa Identify differ components Identify proce Service the rectifying the equipments e Enter into a requipment Demonstrate Practice healt 	epair and maintenance co a model of setting a enterp th and safety at the work p others' safety and intr	ship naintenance centre ne equipment: and their and faults findings. ding in farm machines, repaired farm machine entract of farm machinery orise blace in terms of personal	









This course encompasses $\underline{5}$ out of $\underline{5}$ National Occupational Standards (NOS) of "Agriculture Machinery Repair and Maintenance Service Provider" Qualification Pack issued by " $\underline{\text{Agriculture Skill Council of India}}$ ".

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	Introduction Theory Duration (hh:mm) 02:00 Practical Duration (hh:mm) 00:00 Corresponding NOS Code Bridge Module	 Understand general discipline in the class room and workshop (Do's & Don'ts) Study the scope and importance of Farm Mechanization industry in India Familiarize with different farm machineries' manufacturers & their brands/models Understand the role of a 'Agriculture Machinery Repair and Maintenance Service Provider' and the progression pathways 	Laptop, white board, marker, projector and video films and Presentations
2	Undertake entrepreneurship activities Theory Duration (hh:mm) 10:00 Practical Duration (hh:mm) 20:00 Corresponding NOS Code AGR/N9910	 State the importance of entrepreneurship Select entrepreneurship as an alternate career option Explain distinguishing features of entrepreneurship, self employment and wage employment Discuss case studies, video presentation, group discussion, debates and exercise in entrepreneurship activities State the role and reward of entrepreneurship Explain the need of market survey, Asses the market demand Identify possible sources of finance/loan Identify potential customers and maintain customer database Conduct target market assessment and decide positioning of products/ services which is easily accessible to potential buyers Select location for conducting business State importance of team for management of business Understand government laws, local law, state laws and other regulations for business activity Discuss and interact with successful entrepreneurs and business people in 	Laptop, white board, marker, projector and various types of forms, internet connection









Sr. No.	Module	Key Learning Outcomes	Equipment Required
		 a similar field to gain expertise Identify distribution and marketing channels considering the requirements and constraints associated with the same Calculate costing and pricing of a product State risk assessment in business Identify opportunities for scaling up the business Collect information related to various subsidies/funds/ schemes offered by the government, authorized state units and other financial institutions Maintain and track records, and monitor them on a regular basis Select promotional strategies for the business based on the budget and target segment State minimizing costs and maximizing profits steps 	
3	Prepare for setting up repair and service centers Theory Duration (hh:mm) 10:00 Practical Duration (hh:mm) 40:00 Corresponding NOS Code AGR/N1137	 State steps and requirements of setting up of an enterprise Explain procedure and requirements involved in setting up of an enterprise-registration and license, infrastructure, legal etc Describe types of cost-fixed and variable Calculate the costs expected to be incurred in setting up of a business Describe loans and its type List loaning agency and its selection Explain types of loan /funds based on factors Identify financial institutions for financial assistance List forms and its use for loan Fill application for long and medium term loans to purchase land, construct factory building/shed and to purchase machineries and equipments Fill loan forms in the financial institutions and commercial banks by submitting formal application along with the required documents (as applicable) Interpret and ensure adherence to state laws and other laws pertaining to commercial establishments such as: Shops and establishments act Taxation laws 	Calculator Map, Drawing sheet









Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Set up and	Labour laws Decide location of centre based on the following parameters: Proximity to farmer's lands Space available for easy maneuvering of equipment Proximity to power source so that electric power is available on a regular basis Water supply for both convenience and safety Distance from industrial areas and chemical factories Select criteria for layout of small and medium service centre Identify location of different machine in service centre Mark location for storage of spare parts and tools and equipments in centre	tools such as screw
4	Set up and operationalize repair and maintenance centre Theory Duration (hh:mm) 10:00 Practical Duration (hh:mm) 60:00 Corresponding NOS Code AGR/N1138	 List different types of machineries and equipments which would be required for servicing and repair of farm machinery Make a list of tools and equipments required for workshop. Select mode of purchase of tools and equipment by cash or loan Select vendors for purchase of tools and equipment for centre Recruit workers as per the requirement Assign work to mechanics Describe procedure for repairing, overhauling and servicing of machinery State importance of regular maintenance of engines and cooling systems Organize duties and work plan for all the workers Resolve team conflicts, if any Monitor the progress of the assigned work and prepare progress report Identify steps of troubleshooting equipment during repairs State customer service centre counter and its importance Fill forms of servicing or repair with proper discussion, Check the machine and identify the problem Prepare a rough estimate of repairing Prepare bills of repairing work and handover farm machine to customer Follow up with customer 	tools such as screw driver set, pliers set, hammer set, set of chisels, set of files, hand hacksaw, set of spanners, set of sockets, set of pullers, pipe wrench, adjustable screw wrench, chisel set, tongs, hand grease gun, bench vice, micrometer, vernier callipers, screw jack, hydraulic jack, air compressor, washing machine, welding machine, bearing pullers, anvil, cotton jute etc, exhaust fan power cutter, Drill machine









Sr. No.	Module	Key Learning Outcomes	Equipment Required
	documentation and record keeping related to repair and maintenance activities (hh:mm) 10:00 Practical Duration (hh:mm) 20:00 Corresponding NOS Code AGR/N1139	 document records List types of document Describe documentation procedure and filling of documents Maintain records of recurring costs Maintain a log book for tool, equipment or machinery use and the time that it was used for Maintain records of periodical maintenance of such as utilization, performance, breakdown details, corrective actions, etc Prepare visitor record register Develop balance sheet to assess profitability of business Maintain daily cash record 	connection, File, register and leadger, almiraha, office furniture etc.
6	Maintain health and safety at the workplace Theory Duration (hh:mm) 08:00 Practical Duration (hh:mm) 10:00 Corresponding NOS Code AGR/N9903	 List safety checks before operation of all machinery as per manual and standard procedure Identify potential hazards and its reporting to the supervisor Explain the importance of protective clothing or safety equipment Read and understand the hazards of use and contamination mentioned on the labels of pesticides/ fumigants, etc. Describe the method of use of equipment and materials safely and correctly Explain generation of waste at centre like agricultural and non agricultural waste and its kind Describe procedure of disposing of waste safely and correctly in a designated area List accident and its type at the repairing centre List helpline numbers for hospital, ambulance, fire centre and police Report any accidents, incidents or problems without delay to an appropriate person and take necessary immediate action to reduce further danger 	protective equipment Like: Helmet , Cotton / woollen safety gloves, Safety boots, Safety Harness; First Aid Kit: Bandages, Adhesive bandages, Betadine Solution / ointment, Pain relief spray / ointment, Antiseptic liquid; Phone directory, Search lights, fire extinguisher
	Total Duration: Theory Duration (hh:mm) 50:00	Unique Equipment Required: Computer/ Laptop, white board, marker, projection of forms, internet connection, protective equipment, Cotton / woollen safety gloves, Safety Safety Harness; First Aid Kit: Bandages, Add Betadine Solution / ointment, Pain relief spra	pment Like: ty boots, hesive bandages,
	Practical Duration (hh:mm)	liquid; Phone directory, Search lights, fire ext Workshop tools such as screw driver set, plie	inguisher









Sr. No.	Module	Key Learning Outcomes	Equipment Required
	150:00	of chisels, set of files, hand hacksaw, set of sockets, set of pullers, pipe wrench, adjustable set, tongs, hand grease gun, bench vice, mic callipers, screw jack, hydraulic jack, air comp machine, welding machine, pullers, anvil, cot fan, power cutter, drill machine	ble screw wrench, chisel crometer, vernier bressor, washing

Grand Total Course Duration: 200 Hours, 0 Minutes

(This syllabus/ curriculum has been approved by Agriculture Skill Council of India)









Trainer Prerequisites for Job role: "Agriculture Machinery Repair & Maintenance Service Provider" mapped to Qualification Pack: "AGR/Q1111, v1.0"

Sr. No.	Area	Details
1	Description	Trainer is responsible for educating the trainees- setting up and operationalization of agriculture machinery repair and maintenance centre
2	Personal Attributes	Trainer should be Subject Matter Expert. He/ she should have good communication, leadership, observation and practical oriented skills.
3	Minimum Educational Qualifications	10+2 with Science
4a	Domain Certification	Certified for Job Role: "Agriculture Machinery Repair and Maintenance Service Provider" mapped to QP: "AGR/Q1111, v1.0". Minimum accepted score is 80%.
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q0102". Minimum accepted score as per respective SSC guidelines is 80%.
5	Experience	 B Tech in Mechanical / Agriculture engineering B Sc Agriculture with 1 year of relevant work experience and 2 years of total work experience Diploma / ITI (Mechanical / Agriculture engineering) with 3 years of relevant work experience 10+2 with Science and having any Certificate course in Farm Mechanization with 5 years of relevant work experience









Annexure: Assessment Criteria

Job Role Agriculture Machinery Repair and Maintenance Service Provider

Qualification Pack AGR/Q1111, v1.0

Sector Skill Council Agriculture Skill Council of India

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. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
- 4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
- 5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.
- 6. To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
- 7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.









	Compulsory				
Total Marks: 500					
			Marks A	llocation	
Assessment outcomes	Assessment criteria for outcomes	Total Marks	Out Of	Theory	Skills Practical
1. AGR/N9910 Undertake entrepreneurship activities	PC1. conduct market survey and analyze market demand based on market trend, existing competition, current requirement, market status, etc	100	7	2	5
	PC2. identify possible sources of finance/loan		6	2	4
	PC3. identify potential farmers and maintain farmer database		7	2	5
	PC4. conduct target market assessment and decide positioning of products/services which is easily accessible to potential buyers		7	2	5
	PC5. identify suitable location for ease of conducting business		6	2	4
	PC6. identify and lead a team for management of business		6	2	4
	PC7. ensure compliance with all government laws, local state laws and other regulations as maybe applicable		7	2	5
	PC8. interact with successful entrepreneurs and business people in a similar field to gain expertise		7	2	5
	PC9. identify distribution and marketing channels considering the requirements and constraints associated with the same		7	2	5
	PC10. set a pricing strategy for the product/service based on the value of the product and modify pricing as and when required		7	2	5
	PC11. conduct risk assessment and identify opportunities for scaling up the business		7	2	5
	PC12. collect information related to various subsidies/funds/ schemes offered by the government, authorized state units and other financial institutions		7	2	5
	PC13. track and maintain records, and monitor them on a regular basis		6	2	4
	PC14. develop and execute promotional strategies for the business based on the budget and target segment		7	2	5









	PC15.	implement processes which help in minimizing costs and maximizing profits		6	2	4
				100	30	70
2. AGR/N1137 Prepare for setting up repair and service centre	PC1.	assess requirements of different machineries by carrying out user survey on farmer's field	100	10	3	7
	PC2.	identify appropriate tools and machineries which would be required for servicing and repair of machinery		10	3	7
	PC3.	self evaluate on ability to repair and practice repair, overhauling and servicing of machinery		10	3	7
	PC4.	calculate amount of space that would be required for storage of spare parts and tools and equipments		10	3	7
	PC5.	decide location of centre based on the following parameters: — proximity to farmer's lands				
		space available for easy maneuvering of equipment				
		 proximity to power source so that electric power is available on a regular basis water supply for both 		10	3	7
		convenience and safety — distance from industrial areas and chemical factories				
	PC6.	draw up and estimate the costs expected to be incurred in setting up the business				
		fixed costvariable cost		10	3	7
		cost of labour				
	PC7.	identify potential external sources of funds based on factors such as				
		length of time for which funds are available		10	3	7
	PC8.	costs involved approach financial institutions for				
	—	approach financial institutions for financial assistance such as commercial/regional rural/co-operative				
	_	banks NABARD: national bank for agriculture and rural development - which provides long, medium and short term loans		10	3	7
	PC9.	apply for long and medium term loans to purchase land, construct factory building/shed and to purchase machineries and equipments		10	3	7
	PC10.	apply for loans in the financial institutions and commercial banks by submitting formal application along with following documents (as applicable)		10	2	7
		 loan application (duly filled) proof of possession of land/building 		10	3	7
		 budgetary quotations of plant and 				









	machinery				
	project report				
			100	30	70
3. AGR/N1138 Set up and operationalize repair	PC1. select and order appropriate machinery and equipments by prior consultation	100	4	1	3
and maintenance centre	PC2. select mode of purchase of tools and equipment:				
	— cash		5	2	3
	— credit				
	PC3. identify and select vendors for purchase of tools and equipment required for repair and maintenance		4	1	3
	PC4. submit necessary applications to relevant government departments and obtain utilities such as water, power, communication etc		4	1	3
	PC5. interpret and ensure adherence to state laws, and other laws pertaining to commercial establishments such as:				
	shops and establishments act		5	2	3
	taxation laws				
	— labour laws				
	PC6. recruit workers as per the requirment		4	1	3
	PC7. assign work to mechanics		4	1	3
	PC8. organize duties and work plan for all the workers		4	1	3
	PC9. monitor the progress of the assigned work and prepare progress report		4	1	3
	PC10. help in troubleshooting equipment during repairs		4	2	2
	PC11. resolve team conflits, if any		4	2	2
	PC12. check for mechanical defects (paying particular attention to brakes)		4	1	3
	PC13. check all electrical connections		4	1	3
	PC14. check if safety guards have been replaced or repaired as per need		4	1	3
	PC15. check if machines' cutting blades have been sharpened or replaced as per need		4	1	3
	PC16. ensure regular maintenance of engines and cooling systems		4	1	3
	PC17. ensure proper lubrication, oil changes and filter changes		4	1	3
	PC18. ensure carry out servicing of lifting equipment		4	1	3
	PC19. ensure blockages, if any, are cleared		4	1	3
	PC20. ensure that light metal machining, welding is carried out, if required		4	1	3
	PC21. check air in tyres and perform operations accordingly		4	1	3
	PC22. check all hydraulic and transmission systems and ensure they are serviced		4	1	3
	PC23. diagnose faults in cooling and fuel systems, and ensure service and repair accordingly		5	2	3









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	PC24	. ensure training of team on safety standards:				
	-	 stopping the machine before any intervention 				
	-	 making sure the machine has come to rest 				
	-	 securing anything which could move or rotate 				
	-	 using the right tools for the job 		5	2	3
	-	 following the manufacturer's instructions/procedures 				
	-	replacing the guards before restarting the machine when the job is finished				
	-	checking the machine before restarting				
				100	30	70
4. AGR/N1139 Ensure proper documentation	PC1.	document and maintain records of recurring costs such as:	100			
and record keeping related to the farm mechanization unit/		 inventory cost for storage of agriculture tools, equipments and machineries 				
service centre		fuel/lubricant cost		15	5	10
		— labour charges				
		 interest on bank loans 				
		 maintenance cost of job performed by centre 				
	PC2.	document and maintain records of tools, equipments and machineries and their supplier/manufacturer details, manuals, annual maintenance details,		15	5	10
	PC3.	etc. maintain a log book for tool, equipment or machinery use and the time that it		14	4	10
	PC4.	was used for document and maintain records of				
	1 04.	periodical maintenance of each tool, equipment or machinery such as utilization, performance, breakdown details, corrective actions, etc.		14	4	10
	PC5.	document and maintain database of farmers along with frequency of visit and sales details		14	4	10
	PC6.	maintain a balance sheet to assess profitability of business		14	4	10
	PC7.	maintain a daily cash record to keep a record of cash recieved from sales on a daily basis		14	4	10
				100	30	70
5. AGR/N9903 Maintain health and safety at the workplace	PC1.	undertake basic safety checks before operation of all machinery and vehicles and report all potential hazards to the	100	6	2	4
	PC2.	supervisor identify work for which protective clothing or equipment is required and perform those duties in accordance with workplace policy		7	2	5
	PC3.	read and understand the hazards of use and contamination mentioned on		7	2	5









the I	abels of pesticides/fumigants, etc.				
man acco	ess risks prior to performing ual handling jobs, and work ording to currently recommended practices		7	2	5
and	equipment and materials safely correctly and return the same to gnated storage when not in use		7	2	5
PC6. dis	pose off waste safely and correctly designated area		6	2	4
PC7. rec actio	ognize risks to bystanders and take n to reduce risk associated with in the workplace		7	2	5
PC8. per mini proc instr	form work in a manner which mizes environmental damage all edures and ensure work uctions for controlling risks are wed closely		7	2	5
prob appr	ort any accidents, incidents or lems without delay to an opriate person and take necessary ediate action to reduce further per		7	2	5
acci inclu direc	dents, fires and emergencies, ding communicating location and etions for emergency evacuation		7	2	5
com	low emergency procedures to pany standard / workplace irements		6	2	4
acco spec	se emergency equipment in ordance with manufacturers' ifications and workplace irements		7	2	5
patie	vide treatment appropriate to the ent's injuries in accordance with gnized first aid techniques		7	2	5
PC14. r	ecover (if practical), clean, ect/test, refurbish, replace and store irst aid equipment as appropriate		6	2	4
PC15. repo	ort details of first aid administered in ordance with workplace procedures.		6	2	4
	·		100	30	70
GRAND TO	TAL	500	500	150	350







