

Model Curriculum

Grain Mill Operator

SECTOR: FOOD PROCESSING
SUB-SECTOR: FOOD GRAIN MILLING
OCCUPATION: PROCESSING
REF ID: FIC/Q1003, V1.0
NSQF LEVEL: 4



Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

FOOD INDUSTRY CAPACITY AND SKILL INITIATIVE (FICSI)

for the

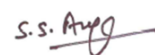
MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: 'Grain Mill Operator' QP No. 'FIC/Q1003, NSQF Level 4'

Date of Issuance: 04 September, 2018

Valid up to: 30 June, 2019

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



Authorized Signatory
(Food Industry Capacity and Skill Initiative)

TABLE OF CONTENTS

1. <u>Curriculum</u>	01
2. <u>Trainer Prerequisites</u>	06
3. <u>Annexure: Assessment Criteria</u>	07

Grain Mill Operator

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Grain Mill Operator”, in the “Food Processing” Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Grain Mill Operator		
Qualification Pack Name & Reference ID. ID	FIC/Q1003 v1.0		
Version No.	1.0	Version Update Date	04/09/2018
Pre-requisites to Training	Preferably Class 8 and 2-3 years' experience in Milling		
Training Outcomes	After completing this programme, participants will be able to: <ul style="list-style-type: none"> • Prepare and maintain work area and process machineries for operation a grain mill • Prepare for production of products from various grains • Operate grain mill • Document and maintain records related to operating a grain mill • Follow food safety, hygiene and sanitation for processing food products 		

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Corresponding NOS Code FIC/N1007	<ul style="list-style-type: none"> Prepare the machines and tools required for production 	
4.	Prepare for Production of Products From Various Grains Theory Duration (hh:mm) 15:00 Practical Duration (hh:mm) 20:00 Corresponding NOS Code FIC/N1008	<ul style="list-style-type: none"> Check the working and performance of each equipment Calculate the process time Analyze the process flow chat Plan the batch size considering full capacity utilization of machineries Demonstrate the weighing of raw material for each process 	
5.	Operate a Grain Mill Theory Duration (hh:mm) 15:00 Practical Duration (hh:mm) 40:00 Corresponding NOS Code FIC/N1009	<ul style="list-style-type: none"> Perform a check if all the machineries are clean and in good working conditions Demonstrate assembling of all components of machines Perform a pre check on all machineries Demonstrate the working on different equipments present in a grain mill like De-stoner, separator, de-Husker, Splitter, whitener, polisher, blender, pulverizer, stone mill / roller Mill, sifter Demonstrate the setting of different control parameters Demonstrate the packaging and analyze the quality of the finished product Demonstrate cleaning the machineries used with recommended sanitizers following CIP (clean-in-place) procedure Demonstrate cleaning the equipment and tools used using recommended cleaning agents and sanitizers 	De-stoner, Separator, De-Husker, Splitter, Whitener, Polisher, Blender, Pulverizer, Stone mill / Roller Mill, Plansifter , Packaging Machines, Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual

Sr. No.	Module	Key Learning Outcomes	Equipment Required
6.	Complete Documentation and Record Keeping Related to Operating a Grain Mill Theory Duration (hh:mm) 13:00 Practical Duration (hh:mm) 10:00 Corresponding NOS Code FIC/N1010	<ul style="list-style-type: none"> State the need for documenting and maintaining records of raw materials, processes and finished products State the method of documenting and recording the details of raw material to final finished product Demonstrate the process of documenting records of production plan, process parameters, and finished products 	Food Safety Manual, Log Books, Computer/Laptop
7.	Food Safety, Hygiene and Sanitation for Processing Food Products Theory Duration (hh:mm) 15:00 Practical Duration (hh:mm) 30:00 Corresponding NOS Code FIC/N9001	<ul style="list-style-type: none"> State the importance of safety, hygiene and sanitation in the baking industry Apply the industry standards to maintain a safe and hygiene workplace Apply HACCP principles to eliminate food safety hazards in the process and products Apply safety practices in the work area 	Protective Gloves, Head Caps, Safety Goggles, Safety Boots, Mouth Covers, Sanitizer, Food Safety Manual ,Log Books etc.
8.	Professional and Core Skills Theory Duration (hh:mm) 06:00 Practical Duration (hh:mm) 10:00 Corresponding NOS Code Bridge Module	<ul style="list-style-type: none"> Undertake a self-assessment test to identify personal strengths and weaknesses Plan and schedule the work order and manage time effectively to complete the tasks assigned State the importance of decision making Identify potential problems and make sound and timely decision State the importance of listening 	
9.	IT Orientation	<ul style="list-style-type: none"> Identify parts of the computer 	Computer/Laptop

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Theory Duration (hh:mm) 08:00 Practical Duration (hh:mm) 15:00 Corresponding NOS Code FIC/N1010	<ul style="list-style-type: none"> Use the computer keyboard effectively to type Use ERP effectively to record day-to-day activities Use the word processor effectively Use the spreadsheet application effectively Use the computer to document day-to-day activities 	
	Total Duration 240:00 Theory Duration 90:00 Practical Duration 150:00	Unique Equipment Required: De-stoner, Separator, De-Husker, Splitter, Whitener, Polisher, Blender, Pulverizer, Stone mill / Roller Mill, Plansifter , Packaging Machines, Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual, Log Books, Computer/Laptop	

Grand Total Course Duration: **240Hours, 0 Minutes**

(This syllabus/ curriculum has been approved by [SSC: Food Industry Capacity and Skill Initiative](#))

Trainer Prerequisites for Job role: “Grain Mill Operator” mapped to Qualification Pack: “FIC/Q1003, v1.0”

Sr. No.	Area	Details
1	Description	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “FIC/Q1003”, Version 1.0
2	Personal Attributes	An aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training, and pre/post work to ensure competent, employable candidates at the end of the training. Strong communication skills, ability to work as part of a team; a passion for quality and for developing others; well-organized and focused, eager to learn and keep oneself updated with the latest in the mentioned fields.
3	Minimum Educational Qualifications	<ul style="list-style-type: none"> • B.Sc /B.Tech/BE or PG Diploma in Food Process Engineering/ Grain Milling with 2-3 years of hands on experience in a Grain Milling Unit • M.Sc /M.Tech/ME in Food Engineering/ Grain Milling with 1-2 years of hands on experience in a Grain Milling Unit
4a	Domain Certification	Certified for Job Role: “Grain Mill Operator” mapped to QP: “FIC/Q1003, 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 is 80 % as per FICSI guidelines.
5	Experience	<ul style="list-style-type: none"> • B.Sc /B.Tech/BE or PG Diploma in Food Engineering/ Grain Milling with 2-3 years of hands on experience in a Grain Milling Unit • M.Sc /M.Tech/ME in Food Process Engineering/ Grain Milling with 1-2 years of hands on experience in a Grain Milling Unit

Assessment Criteria

CRITERIA FOR ASSESSMENT OF TRAINEES	
Job Role	Grain Mill Operator
Qualification Pack	FIC/Q1003
Sector Skill Council	Food Processing

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

		Marks Allocation			
		Total Marks	Out Of	Theory	Skills Practical
1. FIC/N1007 (Prepare and maintain work area and process machineries for operating a grain mill)	PC.1 Clean and maintain the cleanliness of the work area using approved sanitizers and keep it free from dust, waste, flies and pests	100	25	10	15
	PC2. Ensure that the work area is safe and hygienic for food processing		10	3	7
	PC3. Dispose waste materials as per standard operating procedures and industry requirements		15	5	10
	PC4. Check the working and performance of all machineries and tools used such as de-stoner, de-huller, polisher, blender, pulverizer, grinders like plate mill / hammer mill / roller mill, screens and sieves, packaging machines, etc.		15	5	10
	PC5. Clean the machineries and tools used with approved sanitizers following the company specifications and standards		15	5	10
	PC6. Place the necessary tools required for the process		5	2	3
	PC7. Attend minor repairs/ faults of machines, if required		7.5	2.5	5
	PC8. Select and set the machines and tools required for production		7.5	2.5	5
			100	35	65
2. FIC/N1008 (Prepare for production of products from various grains)	PC1. Read and understand the production order from the supervisor	100	10	4	6
	PC2. Ensure the working and performance of each equipment required for process		10	4	6
	PC3. Calculate the process time for effective utilization of machineries		10	4	6
	PC4. Plan batch size considering full capacity utilization of equipments		5	2	3
	PC5. Plan to utilize equipments for multiple products without affecting the quality of the finished products, and to optimize production and saving energy		5	1	4
	PC6. Allot responsibilities/ work to the assistants and helpers		10	3	7
	PC7. Refer process chart/ product flow chart		5	2	3
	PC8. Weigh the raw materials required for the batch		10	3	7
	PC9. Check the conformance of raw material quality to company standards, through physical analysis or by referring the quality analysis report from the supplier / internal lab analysis report		10	3	7

	PC10. Lubricate machineries for smooth operation		10	3	7
	PC11. Ensure working and performance of required machineries and tools		10	4	6
	PC12. Keep the tools accessible to attend repairs/faults in case of breakdown		5	2	3
			100	35	65
3. FIC/N1009 (Operate grain mill)	PC1. Read and understand the production order from the supervisor	100	2	1.5	0.5
	PC2. Refer to the process chart/ product flow chart for grain processing and understand the machineries required and process parameters		2	1.5	0.5
	PC3. Set controls of automatic measuring scales in continuous process to transfer measured quantity of food grains for milling		3	1	2
	PC4. Change screens/sieves of cleaning, grading and sieving machines such as rotary screen cleaner, graders, plan sifter, etc. for cleaning based on size and for grading based on fineness		3	1	2
	PC5. Adjust controls of blowers or suction fan to remove light impurities, dust and smaller particles		3	1	2
	PC6. Set controls and operate elevators and conveyors to transfer dumped grains to the processing machine in different areas for various processing		3	1	2
	PC7. Set controls and adjust the speed of the separator, aspirator, etc. to remove light weight impurities from grains		3	1	2
	PC8. Set controls of de-stoner for feed rate into the machine, speed of machine to remove stones from grains		3	1	2
	PC9. Set and maintain water level and time of the conditioner for soaking/conditioning/tempering the grains, observe gauges to determine that moisture content and adjust controls to maintain required moisture content		3	1	2
	PC10. Turn valves to allow steam through process lines (for par-boiling), observe gauges to verify temperature, pressure etc, and adjust controls to maintain required temperature, pressure etc		3	1	2
	PC11. Adjust controls or turns valve to control speed to regulate amount of grain (par boiled grain) conveyed into drier		3	1	2

PC12. Adjust controls of the drier to set the temperature and drying time to dry wet grain to required moisture level	3	1	2
PC13. Operate husker to remove husk from the grain by adjusting the rollers (of rubber roll huskers) and setting the clearance between the rollers	3	1	2
PC14. Operate aspirator by controlling the speed of the aspirator fan to separate de-husked grains and remove husk	3	1	2
PC15. Operate splitter machines to split or separate de-husked grains by controlling the rotation of the rotary blades	3	1	2
PC16. Operate whitener and polisher machines to remove bran from grains by adjusting pressure in whiteners and polishers to peel off the bran	3	1	2
PC17. Control the stream of air passing through the cylinder to cool the grain and to blow off the bran	3	1	2
PC18. Operate length graders to grade processed grain based on length by controlling the rotation of the cylinders, and maintaining and ensuring the position of each	3	1	2
PC19. Operate sifter to remove broken grains by controlling the vibration speed	2	0.5	1.5
PC20. Observe cleaning, de-stoning, soaking, par boiling, de-husking, hulling and polishing processes	3	1	2
PC21. start and control operation of the machine such as separator, de-stoner, husker, abrasive whitener, friction whitener, polisher, sorter, grader, to clean, de-stone, de-husk, remove bran, polish, sort and grade grains (as applicable)	2	1	1
PC22. Check the grains during and after each process and adjust machineries setting to achieved products as per specifications and standards of the organisation	2	0.5	1.5
PC23. Check the weight of grains before and after each stage of processing	3	1	2
PC24. Operate grinders like plate mill/ stone mill/roller mill to reduce the size of processed grain	3	1	2
PC25. Fix/replace grinding rollers	2	0.5	1.5
PC26. Open and close slides in spouts to route grain to various grinders and sifters	2	0.5	1.5

	PC27. Open and adjust feed chutes to regulate flow of grain through machine hopper into grinders		3	1	2
	PC28. Adjust the clearance between each rollers of roller mill by turning wheels or by setting controls according to grain size and hardness		3	1.5	1.5
	PC29. Start machine and adjust controls to regulate speed, to obtain required fineness and to achieve maximum yield		2	1	1
	PC30. Inspect product and sift out chaff to determine the yield		2	0.5	1.5
	PC31. Assess quality of finished product(s) by checking the physical parameters and sample the products and transfer sample to quality lab for analysis		2	0.5	1.5
	PC32. Start conveyors and elevators to transfer finished products to packing machine		2	0.5	1.5
	PC33. Operate packaging/bagging machinery by setting the batch code, date coding and filling quantity, etc		2	0.5	1.5
	PC34. Start, stop or regulate speed of packaging line conveyor		2	0.5	1.5
	PC35. Check the weight of the packed/bagged product to ensure its conformance to standards		1	0.5	0.5
	PC36. Clean work area, machineries, equipment and tools using recommended cleaning agents and sanitizers		4	1	3
	PC37. Attend minor repairs/faults of all machines (if any)		4	1	3
	PC38. Ensure periodic (daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment following the SOP or following suppliers instructions/manuals		2	1.5	0.5
			100	35	65
4. FIC/N1010 (Complete documentation and record keeping related to operation of a grain mill)	PC1. Document and maintain record of details of raw materials and packaging materials such as name of raw materials, type and variety, vendor/supplier details, season, grown area, quantity, receiving date, supplier details, receiving date/date of manufacture, expiry date, supplier quality document, quality parameters of all raw materials, internal quality analysis report, etc. as per organisation standards	100	10	6	4
	PC2. Document and maintain records of		5	3	2

	observations (if any) related to raw materials and packaging materials			
	PC3. Load the raw material details in ERP for future reference	5	3	2
	PC4. Verify the documents and track from finished product to raw materials, in case of quality concerns and during quality management system audits	5	3	2
	PC5. Document and maintain records of production plan with details such as product details, production sequence, equipments and machinery details, efficiency and capacity utilization of equipment	10	6	4
	PC6. Document and maintain records of process details such as type of raw material used, process parameters (temperature, time etc. as applicable) for entire production in process chart or production log for all products produced	15	9	6
	PC7. Document and maintain records of batch size, production yield, wastage of raw materials, energy utilization and final products produced	10	6	4
	PC8. Document and maintain record of observations (if any) or deviations related to process and production	5	3	2
	PC9. Load the production plan and process details in ERP for future reference	5	3	2
	PC10. Verify documents and track from finished product to ingredients, in case of quality concerns and for quality management system audits	5	3	2
	PC11. Document and maintain records of the types of finished products produced	3	2	1
	PC12. Document and maintain records of the finished products details such as batch number, time of packing, date of manufacture, date of expiry, other label details, primary, secondary and tertiary packaging materials for all finished products, storage conditions, etc. as per organisation standards	7	4	3
	PC13. Document and maintain record of observations or deviations (if any) related to finished products	5	3	2
	PC14. Load the finished product details in ERP for future reference	5	3	2

	PC15. Verify the documents and track from finished product to ingredients, in case of quality concerns and for quality management system audits		5	3	2
			100	60	40
5. FIC/N9001 (Food safety, hygiene and sanitation for processing food products)	PC1. Comply with food safety and hygiene procedures followed in the organization	100	5	2	3
	PC2. Ensure personal hygiene by using of gloves, hairnets, masks, ear plugs, goggles, shoes, etc.		6	1	5
	PC3. Ensure hygienic production of food by inspecting raw materials, ingredients, finished products, etc. for compliance to physical, chemical and microbiological parameters		5	2	3
	PC4. Pack products in appropriate packaging materials, label and store them in designated area, free from pests, flies and infestations		10	4	6
	PC5. Clean maintain and monitor food processing equipment periodically, using it only for specified purpose		5	2	3
	PC6. Use safety equipment such as fire extinguisher, first aid kit and eyewash station when required		10	4	6
	PC7. Follow housekeeping practices by having designated area for materials/tools		5	2	3
	PC8. Follow industry standards like GMP and HACCP and product recall process		10	4	6
	PC9. Attend training on hazard management to understand types of hazards such as physical, chemical and biological hazards and measures to control and prevent them		5	1	4
	PC10. Identify, document and report problems such as rodents and pests to management		5	1	4
	PC11. Conduct workplace checklist audits before and after work to ensure safety and hygiene		5	1	4
	PC12. Document and maintain raw material, packaging material, process and finished products for the credibility and effectiveness of the food safety control system		4	1	3
	PC13. Determine the quality of food using criteria such as aroma, appearance, taste and best before date, and take immediate measures to prevent spoilage		5	2	3

	PC14. Store raw materials, finished products, allergens separately to prevent cross-contamination		5	2	3
	PC15. Label raw materials and finished products and store them in designated storage areas according to safe food practices		5	2	3
	PC16. Follow stock rotation based on FEFO/FIFO		10	4	6
			100	35	65