

Model Curriculum

Fruits and Vegetables Selection

In-charge

SECTOR: FOOD PROCESSING
SUB-SECTOR: FRUITS AND VEGETABLES
OCCUPATION: SORTING AND GRADING
REF ID: FIC/Q0108, V1.0
NSQF LEVEL: 3



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: **Fruits and Vegetables Selection In-charge QP No. 'FIC/Q00108, NSQF Level 3'**

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)

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Fruits and Vegetables Selection In-charge

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Fruits and Vegetables Selection In-charge”, in the “Food Processing” Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Fruits and Vegetables Selection In-charge		
Qualification Pack Name & Reference ID. ID	FIC/Q0108, v1.0		
Version No.	1.0	Version Update Date	04/09/2018
Pre-requisites to Training	Preferably Class 8 and 1 year experience in Sorting and Grading		
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 the sorting and grading process, • sort and grade produce, • document and maintain records related to the sorting and grading process, • follow and maintain food safety and hygiene in the work environment. 		

This course encompasses 4 out of 4 National Occupational Standards (NOS) of “Fruits and Vegetables Selection In-charge” Qualification Pack issued by “Food Industry Capacity and Skill Initiative”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p>Introduction to Training Program and Overview of Food Processing Industry</p> <p>Theory Duration (hh:mm) 02:00</p> <p>Practical Duration (hh:mm) 00:00</p> <p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> Define food processing List the various sub sectors of food processing industry State the need for fruits and vegetables processing State the various methods of fruits and vegetables processing State the roles and responsibilities of fruits and vegetables selection in-charge State the process of sorting and grading State the variety and quality of fruits and vegetables 	
2.	<p>Organizational Standards and Norms</p> <p>Theory Duration (hh:mm) 06:00</p> <p>Practical Duration (hh:mm) 10:00</p> <p>Corresponding NOS Code FIC/N0129</p>	<ul style="list-style-type: none"> State how to conduct yourself at the workplace State the personal hygiene and sanitation guidelines State the food safety hygiene standards to follow in a work environment 	Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual
3.	<p>Prepare and Maintain Work Area and Process Machineries for the Sorting and Grading Process</p> <p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm) 30:00</p> <p>Corresponding NOS Code FIC/N0128</p>	<ul style="list-style-type: none"> Identify different equipment used in selection process of fruits and vegetables State the materials and equipment used in cleaning and maintenance of the work area and process machineries State the cleaning processes used to clean the work area Demonstrate the use of different tools and machineries used for selection of fruits and vegetables Demonstrate the appropriate method for cleaning and maintain a work area Inspect if the work area is safe and hygienic for food processing 	Pump, Water, Spray System, Sorting Line Conveyor, Grading Line Conveyor, Electronic Sorting Machine, Packaging Machine, Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> Check the cleanliness of the process machineries required using recommended sanitizers 	
4.	Food Microbiology Theory Duration (hh:mm) 08:00 Practical Duration (hh:mm) 10:00 Corresponding NOS Code FIC/N0128	<ul style="list-style-type: none"> State the types of food microbes State the causes of food spoilage State the process of food spoilage and the criteria to check food spoilage State the need for food preservation State different types of food preservation processes State the method of assessing the quality of produce based on physical parameters 	Sample of Fresh and Spoiled Fruit and Vegetable
5.	Sort and Grade Produce Theory Duration (hh:mm) 15:00 Practical Duration (hh:mm) 40:00 Corresponding NOS Code FIC/N0129	<ul style="list-style-type: none"> State the process of sorting and grading agricultural produce State the storage procedures for incoming produce, packaging materials and packed produce State the chemicals used for washing fruits and vegetables State the method of washing fruits and vegetables Explain the standards for grades of agricultural produce State the types of rejects for each produce Identify rejects and handle rejects as per defined procedures Demonstrate the process of receiving and washing agricultural produce Demonstrate the process of sorting and grading agricultural produce List the types of packaging materials Demonstrate the process of packaging the graded produce Demonstrate the process of cleaning the work area and machineries after production 	Pump, Water, Spray System, Sorting Line Conveyor, Grading Line Conveyor, Electronic Sorting Machine, Packaging Machine, Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual
6.	Complete Documentation and Record Keeping Related to Sorting and Grading Process	<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 	Food Safety Manual, Log Books.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Theory Duration (hh:mm) 11:00 Practical Duration (hh:mm) 04:00 Corresponding NOS Code FIC/N0130	records of production plan, process parameters, and finished products	
7.	Food Safety, Hygiene and Sanitation for Processing Food Products Theory Duration (hh:mm) 20:00 Practical Duration (hh:mm) 40:00 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, Aprons, Safety Goggles, Safety Boots, Mouth Covers, Sanitizer, Food Safety Manual, Log Books etc.
8.	Professional and Core Skills Theory Duration (hh:mm) 04:00 Practical Duration (hh:mm) 06:00 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 Theory Duration (hh:mm) 04:00	<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 	Computer/Laptop

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Practical Duration (hh:mm) 20:00 Corresponding NOS Code FIC/N0130	<ul style="list-style-type: none"> Use the computer to document day-to-day activities 	
	Total Duration 240:00 Theory Duration 80:00 Practical Duration 160:00	Unique Equipment Required: Pump, Water, Spray System, Sorting Line Conveyor, Grading Line Conveyor, Electronic Sorting Machine, Packaging Machine, Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual, Log Book, Computer, Laptop, Sample of Fresh and Spoiled Fruits and Vegetables	

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

Recommend OJT Hours: **80Hours, 0 Minutes**

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

Trainer Prerequisites for Job role: “Fruits and Vegetables Selection Incharge” mapped to Qualification Pack: “FIC/Q0108, 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/Q0108”, 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./B.E. in Food Technology or Agriculture with 2 years of hands on experience in a Fruits/Vegetables Procurement Division
4a	Domain Certification	Certified for Job Role: “Fruits and Vegetables Selection Incharge” mapped to QP: “FIC/Q0108, 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./B.E. in Food Technology or Agriculture with 2 years of hands on experience in a Fruits/Vegetables Procurement Division

Annexure: Assessment Criteria

Assessment Criteria	
Job Role	Fruits and Vegetables Selection Incharge
Qualification Pack	FIC/Q0108, v1.0
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

Assessable Outcome	Assessment Criteria	Total Mark	Out Of	Marks Allocation	
				Theory	Skills Practical
1. FIC/Q0128: Prepare and Maintain Work Area and Process Machineries for the Sorting and Grading Process	PC.1 Prepare 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		10	3	7
	PC3. Dispose waste materials as per defined SOPs and industry requirements		15	5	10
	PC4. Check the working and performance of all machineries and tools such as pump, water spray system, sorting line conveyors, grading line conveyors, sensors in electronic sorting machines, packaging machines, etc.		15	5	10
	PC5. Clean the machineries and tools used with approved sanitizers following SOP		15	5	10
	PC6. Place the necessary tools required for process		5	2	3
	PC7. Attend the minor repairs/ faults of all machines, if required		15	5	10
Total			100	35	65
2. FIC/Q0129: Sort & Grade Produce	PC1. Receive agricultural produce from the supplier/vendor, weigh the produce and check the quality through physical parameters such as appearance, color, texture, maturity, etc.	100	3	1.5	1.5
	PC2. Pump water into the float tank (water tank) and control the water level for washing produce		1	0.5	0.5
	PC3. Measure specified quantity of chlorine and dose in water and prepare chlorinated water (if required) to destroy microbes		1	0.5	0.5
	PC4. Dump the produce in the float tank manually (for selected agricultural produce which can tolerate water treatment) to remove soil, pesticides, dirt, plant debris and rotting parts or start conveyor or ladder elevator and control speed, load the produce in the conveyor to transfer it to the float tank		2	1	1
	PC5. Start the conveyor that lift the produce from the float tank to the rolling conveyor for washing		1	0.5	0.5
	PC6. Open valves of the high pressure spraying system for fresh water and adjust pressure to spray water on produce for thorough washing and to remove chlorine.		3	1	2
	PC7. Control the speed of the drying line conveyor, set the air temperature and		9	3.5	5.5

Assessable Outcome	Assessment Criteria	Total Mark	Out Of	Marks Allocation	
				Theory	Skills Practical
	control air circulation, and allow washed produce to pass through the drying tunnel for drying or adjust controls to transfer produce to the brushing conveyor with brush rollers for wiping and to transfer the produce into different lanes of sorting tables				
	PC8. Start the equipment with brushing rollers, adjust speed and dump produce that cannot tolerate water treatment for brushing and removing soil and dirt on the surface		5	2	3
	PC9. Transfer the produce to the sorting table manually or control the speed of sorting line conveyor, inspect the produce in the sorting line/sorting table visually and remove the severely damaged, defective, deformed, rotting produce by hand and discard		4	1	3
	PC10. Start mechanical sorting machine with mesh screen for sorting produce based on size, dump produce in feed chute or open supply chute to feed material into machine; collect the sorted produce from the discharge outlet		4	1	3
	PC11. Operate the equipment that removes dry foliage attached to the bulb (in case of onion, garlic)		3	1	2
	PC12. Place spherical shaped produce on rings of known diameter to sort them by size, collect the produce that passes through the ring and falls into the containers placed below; replace filled container with empty ones		3	1	2
	PC13. Set control parameters of electronic color sorter for sorting produce based on color		3	1.5	1.5
	PC14. In continuous sorting and grading line, control the speed of the different lanes of sorting line conveyors that diverge into single line to transfer produce to the electronic color sorter for sorting produce based on color		4	1	3
	PC15. Control speed of the conveyor to diverge into number of lanes (as required by the organization) for uniform grading of produce based on weight and size		4	1	3
	PC16. Control the speed of the grading lanes conveyors with mesh screens or diverging belts or rollers with increased spaces between them (in this machine control the		5	2	3

Assessable Outcome	Assessment Criteria	Total Mark	Out Of	Marks Allocation	
				Theory	Skills Practical
	speed of rollers) to sort produce based on size (diameter and length)				
	PC17. Control the speed of the grading lane conveyors with weight sensitive trays to sort produce based on weight		5	2	3
	PC18. Place baskets, tubs, or crates below discharge outlets of each machine and lane, remove full containers from discharge outlets and replace them with empty ones		3	1	2
	PC19. Report any malfunction or discrepancies to the supervisor and implement the suggested corrective action immediately		2	1	1
	PC20. Transfer the containers with sorted and graded produce to the packaging area		1	0.5	0.5
	PC21. Place specified count of sorted and graded produce manually in plastic molded trays, thermoformed PVC trays, etc., place label on trays and pass through shrink wrap machine to wrap with shrinkable plastic films (if required)		4	1	3
	PC22. Wrap individual produce in foam net and place in molded trays and place packed trays in carton		3	1	2
	PC23. Weigh sorted and graded produce such as onions, potatoes, sweet potatoes, etc. and pack in mesh bags of various size either manually or mechanically		3	1	2
	PC24. Feed the sorted and graded produce in the hopper of automatic packing machine, load the packaging materials in the machine, set machine for packaging weight, batch code, date of packing, date of expiry, etc. and start machine to pack specified quantity; collect packed produce from the packaging conveyor for further packaging		4	1	3
	PC25. Form ventilated cartons, place protective material such as paper, straw, etc. in carton, place packed trays in the carton and seal, strap carton if required and weigh the packed cartons		4	1	3
	PC26. Place cartons on pallets, operate shrink wrap machine to shrink wrap palletized cartons for bulk packaging		4	1	3
	PC27. Transfer to packed cartons/ pallets to storage area and store maintaining storage parameters following SOP		2	1	1

Assessable Outcome	Assessment Criteria	Total Mark	Out Of	Marks Allocation	
				Theory	Skills Practical
	PC28. Clean the work area, machineries, equipment and tools using recommended cleaning agents and sanitizers		4	1	3
	PC29. Attend minor repairs/faults of all machines (if any)		4	1	3
	PC30. 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
	Total		100	35	65
3.FIC/N0130: Complete Documentation and Record Keeping Related to Sorting and Grading process	PC1. Document and maintain record of details of all raw materials (fruits And vegetable, dry fruits, nuts, etc.) and packaging materials such as type and variety, vendor/supplier details, season, grown area, quantity, receiving date, expiry date, quality parameters etc., and category, quantity and quality of packaging materials as		10	6	4
	PC2. Document and maintain record on observations (if any) related to raw materials and packaging materials		5	3	2
	PC3. Load the raw material details in ERP for future reference		5	3	2
	PC4. Verify the documents and track from finished products to raw materials, in case of quality concerns and during quality management system audits	100	5	3	2
	PC5. Document and maintain records of process details such as the produce handled, process sequence for various produce, equipment and machineries used for processing and their details, efficiency and capacity utilization		10	6	4
	PC6. Document and maintain records of batch size, and wastage, energy utilization and final yield		15	9	6
	PC7. Document and maintain record of observations (if any) related to process		10	6	4
	PC8. Load the details in ERP for future reference		5	3	2
	PC9. Verify documents and track from packed produce to process, in case of quality concerns and for quality		5	3	2

Assessable Outcome	Assessment Criteria	Total Mark	Out Of	Marks Allocation	
				Theory	Skills Practical
	management system audits				
	PC10. Document and maintain records of the types of produce packed such as variety, quantity, weight, count, grade, date of packing, date of expiry, other label details, etc.		5	3	2
	PC11. Document and maintain records of packaging and storage details such as primary, secondary and tertiary packaging materials used for packing all types of produce, storage type, storage conditions, etc. as per organization standards		10	6	4
	PC12. Document and maintain record on observations or deviations (if any) related to packed produce		5	3	2
	PC13. Load the packed produce details in ERP for future reference		5	3	2
	PC14. Verify the documents and track from packed produce to raw materials, in case of quality concerns and for quality management system audits		5	3	2
	Total		100	60	40
4. 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 use of gloves, masks ,hair net, ear plugs, boots 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 procedures		5	2	3
	PC4. Pack products in appropriate packaging material, label and store them in designated area free from pests, flies etc.		10	4	6
	PC5. Clean, maintain and monitor food processing equipment periodically, using it only for the specified purpose		5	2	3
	PC6. Use safety equipment such as fire extinguisher, eye wash unit, first aid kit when required		10	4	6
	PC7. Follow housekeeping practices by having designated area for machines/tools		5	2	3
	PC8. Follow industry standards like GMP, HACCP and product recall		10	4	6
	PC9. Attend training on hazard management to understand type of physical, chemical and microbiological hazards		5	1	4

Assessable Outcome	Assessment Criteria	Total Mark	Out Of	Marks Allocation	
				Theory	Skills Practical
	PC10. Identify, document and report problems such as rodents and pests to management		5	1	4
	PC11. Conduct workplace checklist audit before and after work to ensure safety and hygiene		5	1	4
	PC12. Document and maintain raw material, process, packaging material to maintain the effectiveness of quality system		4	1	3
	PC13. Determine the quality of food using criteria such as odor, color, taste and best before date and take immediate measures to prevent spoilage		5	2	3
	PC14. Store raw materials, finished products and allergens separately to prevent cross contamination		5	2	3
	PC15. Label raw materials and finished products and store them in different storage areas according to safe food practices		5	2	3
	PC16. Follow stock rotation based on FEFO/FIFO		10	4	6
	Total		100	35	65
	Grand Total	400	400	100	300
	Percentage Weightage		100	40%	60%
	Minimum Pass% to qualify (aggregate):			70%	