Model Curriculum

QP Name: Fruit Pulp Junior Processor

QP Code: FIC/Q0106

Version: 5.0

NSQF Level: 3.0

Model Curriculum Version: 5.0

Food Industry Capacity & Skill Initiative || Shriram Bharatiya Kala kendra, 3rd floor, 1, Copernicus Marg, Mandi House, New Delhi
Delhi 110001 || email: admin@ficsi.in

Table of Contents

Contents

Training Parameters

Sector	Food Processing
Sub-Sector	Fruits and Vegetables
Occupation	Processing-Fruits and Vegetables
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8160.2300,2400
Minimum Educational Qualification and Experience	Grade 10 Pass OR 8th-grade pass with 3-year experience in Food Industry OR Previous relevant Qualification of NSQF Level 2.0 with 3-year experience in Food Industry OR Previous relevant qualification of NSQF Level 2.5 with 1.5-year experience in Food Industry
Pre-Requisite License or Training	NA
Minimum Job Entry Age	16 Years
Last Reviewed On	01-05-2025
Next Review Date	30-04-2028
NSQC Approval Date	01-05-2025
QP Version	5.0
Model Curriculum Creation Date	01-05-2025
Model Curriculum Valid Up to Date	30-04-2028
Model Curriculum Version	5.0
Minimum Duration of the Course	390 Hours
Maximum Duration of the Course	450 Hours

Program Overview

This section summarises the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills to:

- Describe the key steps involved in preparing for fruit pulp production.
- Explain the process of extracting and refining fruit pulp efficiently.
- Discuss the importance of food safety standards in fruit pulp production.
- Discuss employability and entrepreneurship skills relevant to the food processing sector.
- Elucidate the differences in processing techniques for squash and juice production.
- Determine the key factors that influence the texture and consistency of jam, jelly, and ketchup.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration (Hours)	Practical Duration (Hours)	On-the-Job Training Duration (Mandatory) (Hours)	On-the-Job Training Duration (Recommended) (Hours)	Total Duration (Hours)
FIC/N9026: Prepare for Production **NOS Version No.: 1.0** **NSQF Level: 3.0**	**20:00**	**40:00**	**00:00**	**00:00**	**60:00**
Module 2: Carry Out Preparation for Production	20:00	40:00	00:00	00:00	60:00
FIC/N0122: Produce fruit pulp from various fruits **NOS Version No.: 4.0** **NSQF Level: 3.0**	**30:00**	**90:00**	**90:00**	**00:00**	**210:00**
Module 1: Introduction to Food Processing Sector and the Job Role of a Fruit Pulp Junior Processor	05:00	00:00	00:00	00:00	05:00
Module 3: Washing, Sorting, and Initial Fruit Processing	05:00	20:00	20:00	00:00	45:00
Module 4: Pulp Extraction and Pre-Cooking	10:00	40:00	40:00	00:00	90:00
Module 5: Sterilization, Packing, and Canning	05:00	20:00	20:00	00:00	45:00
Module 6: Post-Production Cleaning and Maintenance	05:00	10:00	10:00	00:00	25:00
FIC/N9906: Apply food safety guidelines in Food Processing	**10:00**	**20:00**	**00:00**	**00:00**	**30:00**

NOS Version No.: 1.0 **NSQF Level: 3**					
Module 7: Implement Personal Hygiene and Follow Good Manufacturing Practices	05:00	10:00	00:00	00:00	15:00
Module 8: Apply Food Safety Practices at Workplace	05:00	10:00	00:00	00:00	15:00
DGT/VSQ/N0101: Employability Skills (30 Hours) **NOS Version No.: 1.0** **NSQF Level: 2**	**30:00**	**00:00**	**00:00**	**00:00**	**30:00**
Module 9: Employability Skills (30 Hours)	30:00	00:00	00:00	00:00	30:00
Total Duration	**90:00**	**150:00**	**90:00**	**00:00**	**330:00**

Elective Modules

The table lists the modules and their duration corresponding to the Elective NOS of the QP.

Elective 1: Squash and Juice

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
FIC/N0103: Produce Squash and Juice **NOS Version No.: 4.0** **NSQF Level: 3.0**	**30:00**	**30:00**	**00:00**	**00:00**	**60:00**
Module 10: Juice and Squash Production	20:00	20:00	00:00	00:00	40:00
Module 11: Packaging and Post-Production	10:00	10:00	00:00	00:00	20:00
Total Duration	**30:00**	**30:00**	**00:00**	**00:00**	**60:00**

Elective 2: Jam, Jelly and Ketchup

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training	On-the-Job Training	Total Duration

			Duration (Mandatory)	Duration (Recommended)	
FIC/N0111: Produce jam, jelly and ketchup **NOS Version No.: 3.0** **NSQF Level: 3.0**	**30:00**	**30:00**	**00:00**	**00:00**	**60:00**
Module 12: Preparation and Processing of Jam, Jelly, and Ketchup	20:00	20:00	00:00	00:00	40:00
Module 13: Filling, Packing, and Post-Production Maintenance	10:00	10:00	00:00	00:00	20:00
Total Duration	**30:00**	**30:00**	**00:00**	**00:00**	**60:00**

Module Details

Module 1: Introduction to Food Processing Sector and the Job Role of a Fruit Pulp Junior Processor

Mapped to FIC/N0122, v4.0

Terminal Outcomes:

- Describe the food processing sector in brief.
- Discuss the career opportunities available to the individual within the food processing sector.
- Explain the importance of training program and job role of a Fruit Pulp Junior Processor.

Duration (in hours): 05:00	**Duration (in hours): 00:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Define the term 'Food Processing'. • Discuss the size and scope of the food processing industry in brief. • List the various sub sectors of food processing industry. • Describe the significance of fruit pulp processing within the food processing industry. • Discuss the future trends and career growth opportunities available to the Fruit Pulp Junior Processor. • Explain the key role and responsibilities of a Fruit Pulp Junior Processor. • Describe the key personal and professional attributes required for a Fruit Pulp Junior Processor.	
Classroom Aids	
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Nil	

Module 2: Carry Out Preparation for Production

Mapped to FIC/N9026, v1.0

Terminal Outcomes:

- Discuss the standard practices to be followed to plan for production.
- Demonstrate the tasks to be performed to prepare for the production process.

Duration (in hours): 20:00	**Duration (in hours): 40:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the production planning process in a food processing unit. • Explain how to interpret process charts, product flow charts, and formulation charts used in production. • Define the procedure to estimate manpower and material requirements for production. • Discuss the principles of resource management in preparing for food production. • Explain how to calculate and plan for effective capacity utilization of machinery. • Identify organizational standard operating procedures and hygiene norms for cleanliness in production areas. • List general maintenance and operational practices for food processing machinery and tools. • Elucidate different types of waste generated in food production and their safe disposal methods. • Describe the methods used for inspecting tools, equipment, and machinery for suitability and safety. • Explain the process and considerations involved in allocating responsibilities to production team members.	• Show how to prepare a plan to carry out various tasks as required in the job. • Demonstrate how to ensure availability of raw materials, packaging materials, equipment, and manpower before production. • Show how to clean and maintain the work area according to hygiene and safety standards. • Demonstrate the correct procedure for cleaning, maintaining, and sanitizing machines and tools used in production. • Demonstrate how to dispose of hazardous, food, and packaging waste safely at designated locations. • Show how to inspect tools, equipment, and machinery to ensure operational readiness before production. • Demonstrate how to report faulty or malfunctioning tools and equipment to the appropriate authority. • Show how to organize tools and equipment systematically for efficient production. • Demonstrate how to receive, verify, and organize raw materials and packaging materials before processing. • Show how to assign and communicate work responsibilities effectively to assistants and helpers. • Demonstrate with help of roleplay a situation on how to allot work and responsibilities to the team and confirm that they have understood.
Classroom Aids	

Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films
Tools, Equipment and Other Requirements
Process Related Documents, List of Raw Materials, Tools, Equipment and Machinery, Organizational Documents, Logbook, Packaging Material, etc.

Module 3: Washing, Sorting, and Initial Fruit Processing

Mapped to FIC/N0122, v4.0

Terminal Outcomes:

- Explain the importance of washing and sorting fruits before consumption or processing.
- Describe the process of peeling, de-seeding, or de-stoning fruits and its impact on food preparation.

Duration (in hours): 05:00	**Duration (in hours): 20:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the procedure to receive and check fruits from the supplier/vendor for quality and quantity. • Describe the physical parameters such as appearance, color, texture, and maturity used to check the quality of the fruit. • Determine the methods to monitor the temperature of fruits to ensure they are cooled to the required temperature. • Discuss the Standard Operating Procedures (SOPs) for washing fruits, including automated washing systems, manual washing procedures, and quality inspection of washed fruits. • Elucidate the visual inspection procedure for manually washed fruits. • Explain the use of optical sorting machines for faster and more accurate fruit sorting.	• Demonstrate how to wash fruits by dumping them into a washing tank, transferring them to the washing line conveyor using a ladder conveyor, and rinsing them with a high-pressure spraying system. • Show how to inspect and sort fruits using an optical sorting machine, ensuring damaged, blemished, and rotten fruits are removed automatically. • Demonstrate how to maintain records of washing, sorting, and rejected fruits for traceability. • Show how to load sorted fruits into an automated peeling and de-seeding machine, ensuring complete removal of peel or core using calibrated equipment while minimizing wastage. • Demonstrate how to wash peeled fruits with pump water or an open spraying system while following food safety regulations and manually check for any leftover peel or core residues. • Show how to dispose of or further process peeled material and cores separately, following organizational standards and sustainability guidelines. • Demonstrate how to cut fruits to the required size manually or using an automated chopper/cutter/slicer machine, ensuring uniformity and consistency. • Show how to perform random sampling to verify size consistency and proper removal of inedible parts.

	• Demonstrate how to maintain logbooks and quality records for peeling, coring, slicing, washing, and sorting activities.
Classroom Aids	
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Washing Tank, Washing Line Conveyor, High-Pressure Spray, Peeler, Corer, Open Spray System, Chopper, Slicer Machine, Cutter, etc.	

Module 4: Pulp Extraction and Pre-Cooking

Mapped to FIC/N0122, v4.0

Terminal Outcomes:

- Elucidate the process of fruit pulp extraction and its significance in food processing.
- Discuss the key steps involved in pre-cooking activities for fruit-based products.

Duration (in hours): 10:00	**Duration (in hours): 40:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the operating procedures for ventilation systems, ladder conveyors, chopper/cutter/slicer machines, aseptic packaging machinery, and canning machinery. • Describe the procedures for cutting fruits manually or using automated slicers and choppers. • Explain the methods for disposing of fruit waste in compliance with organizational standards. • Describe the process of replacing damaged or clogged filter screens in pulper cum finisher or pulper refiner machines. • Discuss the peel/core removal process of fruits, including the use of automated peeling and de-seeding machines for higher efficiency. • Elucidate the basics and concepts of fruit pulp extraction, including the integration of automated systems like SCADA and PLC for process control. • Determine the process to collect refined fruit pulp into collection tanks, ensuring automated transfer for consistency and hygiene. • Explain the methods to examine pre-cooked fruit pulp for quality assessment.	• Demonstrate how to extract fruit pulp using high-efficiency automated pulpers and refiners. • Show how to collect the refined pulp in an automated collection tank. • Demonstrate how to inspect pulp to ensure it is free from seeds and fibers. • Show how to replace damaged or clogged filter screens in the pulper cum finisher machine to maintain efficiency. • Demonstrate how to transfer the measured quantity of pulp into a steam-jacketed kettle/pre-cooking tank for controlled cooking. • Show how to set and monitor control parameters such as pressure, temperature, cooking time, and stirrer speed using a PLC for precision. • Demonstrate how to check pulp consistency through texture analysis and measure Brix levels using a refractometer. • Show how to transfer the pre-cooked pulp into a de-aeration tank and then to a continuous evaporator for concentration. • Demonstrate how to send pulp samples to the quality lab for analysis as per FSSAI standards (Brix, pH, titratable acidity, etc.).
Classroom Aids	
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films	

Tools, Equipment and Other Requirements
Collection Tank, Steam Jacketed Kettle or Pre-Cooking Tank, De-Aeration Tank, Evaporator, etc.

Module 5: Sterilization, Packing, and Canning

Mapped to FIC/N0122, v4.0

Terminal Outcomes:

- Describe the procedure for aseptic sterilization and its role in maintaining fruit pulp quality.
- Determine the key factors to consider while packing fruit pulp to ensure safety and longevity.
- Explain the process of canning fruit pulp and its benefits for preservation.

Duration (in hours): 05:00	**Duration (in hours): 20:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the process for transferring products for quality lab analysis. • Explain the process for sending filled aseptic bags or cans to automated storage and retrieval systems. • Explain the process for storing raw materials and packaging materials in temperature-controlled automated warehouses. • Explain the process for storing finished goods in temperature-controlled automated warehouses. • Describe the aseptic packaging process and parameters, incorporating automated filling and sealing mechanisms. • Discuss the procedure to monitor and maintain steam pressure for processing and sterilization. • Elucidate the canning process and parameters, including automated canning and sealing processes. • Determine the process of filling pulp into cans using automated filling systems for improved accuracy and reduced manual handling. • Explain the types and categories of packaging materials, and the role of automated packaging machinery in ensuring efficiency and consistency. • Discuss the importance of retort sterilization for improved product safety and extended shelf life.	• Demonstrate the process of transferring pre-cooked/de-aerated/concentrated pulp into an automated sterilization system. • Show how to maintain the required steam pressure, temperature, and aseptic surge tank conditions during sterilization as per SOP. • Show how to perform sterilization using SCADA and PLC-based control systems, ensuring precise temperature and pressure adjustments. • Demonstrate the correct placement of plastic liners in containers such as drums and cartons and verify that labeling details (manufacturing date, expiry date, batch code, etc.) are printed accurately before filling. • Show how to automate the filling process using sterile closures and filling machines while ensuring contamination control and proper temperature maintenance during storage. • Demonstrate the operation of automated canning machines, including the transfer of pre-cooked/pre-heated pulp into the filling tank, adjusting temperature, volume, and agitator speed, and sealing cans using automated seamers for airtight closure. • Show how to inspect and remove defective or damaged cans using automated vision inspection systems and perform leakage tests using automated pressure testing equipment.

	• Demonstrate the sterilization of empty cans using automated retort sterilization, loading sealed cans into sterilization chambers, and applying retort sterilization for extended shelf life. • Show how to cool sterilized cans using an automated water-cooling system, dry them thoroughly, and pack labeled cans into cartons using automated packaging systems, ensuring proper stacking in the storage area.
Classroom Aids	
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Sterilization Tank, Product Surge Tank, Plastic Liners, Drums, Cartons, Aseptic Bag, Reformer, Flanger, Seamer, Can Body Beader, And Embossing Machines, Machine-Lift, Mechanical Conveyor, Packaging Machine, etc.	

Module 6: Post-Production Cleaning and Maintenance

Mapped to FIC/N0122, v4.0

Terminal Outcomes:

- Discuss the importance of post-production cleaning in maintaining hygiene and product quality.
- Explain the key steps involved in equipment maintenance after fruit pulp processing.

Duration (in hours): **05:00**	**Duration (in hours)**: **10:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the post-production cleaning and maintenance procedures of the production equipment, including CIP (Clean-in-Place) automation. • Describe the quality parameters, basic food microbiology, and methods of quality assessment based on physical parameters. • Discuss the types of sanitizers and disinfectants, along with their handling and storage procedures. • Elucidate the organizational and FSSAI laws and regulations related to product, packaging, and labeling.	• Demonstrate the process of cleaning the work area, machinery, equipment, and tools using CIP (Clean-in-Place) automated sanitization systems. • Show how to attend to minor machine repairs or faults and report major issues for automated system diagnostics and maintenance. • Demonstrate the procedure for updating and calibrating SCADA/PLC systems to ensure optimal performance. • Show how to conduct periodic maintenance (daily/weekly/monthly/ quarterly/annual) for automated machines as per the manufacturer's guidelines.
Classroom Aids	
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
CIP (Clean-in-Place) System, pH Meter, Sanitizing Sprayers and Foggers, Weighing and Packaging Scales, etc.	

Module 7: Implement Personal Hygiene and Follow Good Manufacturing Practices

Mapped to FIC/N9906, v1.0

Terminal Outcomes:

- Discuss the importance of personal hygiene and GMP at the workplace
- Demonstrate the tasks to be performed for ensuring personal hygiene and GMP practices at the workplace.

Duration (in hours): 05:00	**Duration (in hours): 10:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Define hazards and risks. • Discuss the various types of health and safety equipment available in an organisation and the methods for obtaining them. • Discuss the organisational health and safety policies and procedures. • Discuss site relevant documented procedure for Personal Hygiene and Visitor/ Contractor rules. • Explain work instructions at levels of employee inside a food manufacturing site. • Discuss how to conduct timely planning and participation of relevant training and awareness sessions on personal hygiene, GMP and related topics. • Explain the importance of timely medical examination from a prescribed and authorized doctor and to comply with the guidelines of Schedule IV as described in Food Safety Standard Authority of India (FSSAI) guidelines. • State how to follow a site relevant documented procedure and area wise work instructions for Good Manufacturing Practices (GMP) to be followed on the site. • List validated Do's & Don'ts inside a food manufacturing firm. • State process flow charts, HACCP summary plan and critical process parameters in each and respective	• Demonstrate the steps to be performed for implementing good manufacturing practices (GMP). • Demonstrate how to follow work instructions at levels of employee inside a food manufacturing site and ensure that the relevant instructions are well communicated and being followed at the fixed timelines. • Show how to fill data in daily monitoring checklist related to personal hygiene, food safety and GMP. • Demonstrate the process to follow man and materials movement throughout the production facility, to restrict unwanted hazards to cross contaminate the products which are being manufactured in the facility. • Show how to tag and number all the equipment, machinery, tools, and other processing aids to keep a proper traceability of the product being manufactured and handled at site. • Demonstrate process of record keeping and documentation such as Daily Monitoring Sheets, Batch Traceability Records, machine records, product parameters, process control parameters etc.

areas of the production line. • Explain how to identify the material requirements such as manufacturing equipment's, Utensils and other processing aids, cleaning chemicals, cleaning work instructions in all the relevant areas of manufacturing facility. • Define the Allergens, their risks and the allergen requirements. • State the relevance of guidelines in manufacturing area and how training evaluation will be implemented. • Explain the process of audits and ways to address the aspects of Good Manufacturing Procedures, personal hygiene and food safety.	
Classroom Aids	
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
GMP Format and Guidelines**,** Allergen Manual**,** Personal Hygiene Guidelines**,** PPE Kits**.**	

Module 8: Apply Food Safety Practices at Workplace

Mapped to FIC/N9906, v1.0

Terminal Outcomes:

- List the food safety practices at the workplace and the ways to implement them.
- Demonstrate the steps to be followed to implement food safety procedures effectively.

Duration (in hours): 05:00	**Duration (in hours): 10:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the various types of health and safety hazards present in the environment. • Discuss the possible causes of risk, hazard or accident at the workplace. • Elucidate the standard practices and precautions used to control and prevent risks, hazards and accidents at the workplace. • Explain requirements to maintain updated facilities, equipment and tool to minimize the risks associated with the products being handled at the site. • State the importance of using protective equipment and clothing for specific tasks and work conditions. • Discuss the role of organisational protocols in preventing accidents and hazards. • Discuss the significance of various types of hazard and safety signs. • Explain FSSAI Schedule IV requirements related to: Pest Control, Cleaning and Sanitation, Utilities, Waste Disposal, Prevention of Cross Contamination, allergen management, corrective action, preventive actions, food operation control etc. • Discuss the relevance of checking critical control points and product parameters. • Explain importance of record keeping and documentation such as daily monitoring sheets, cleaning sheets, parameters etc. • Discuss how to report any food safety	• Show how to apply appropriate techniques to deal with hazards safely and appropriately. • Demonstrate the steps for checking critical control points and product parameters. • Show how to record keeping and documentation such as daily monitoring sheets, cleaning sheets, parameters etc. • Demonstrate appropriate ways to respond to an accident situation or medical emergency promptly and appropriately. • Demonstrate the steps to be followed during emergency and evacuation procedure.

and GMP issue to supervisor, if any.	

Classroom Aids
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films
Tools, Equipment and Other Requirements
Helmet, gloves, rubber mat, ladder, neon tester, leather or asbestos gloves, flame proof aprons, flame proof overalls buttoned to neck, cuff less (without folds) trousers, reinforced footwear, helmets/hard hats, cap and shoulder covers, ear defenders/plugs, safety boots, knee pads, particle masks, glasses/goggles/visors, hand and face shields, machine guards, residual current Devices, shields, dust sheets, respirator.

Module 9: Employability Skills (30 Hours)

Mapped to DGT/VSQ/N0101, v1.0

Duration: 30:00

Key Learning Outcomes

Introduction to Employability Skills Duration: 1 Hour

After completing this programme, participants will be able to:

1. Discuss the importance of Employability Skills in meeting the job requirements

Constitutional values - Citizenship Duration: 1 Hour

2. Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen.

3. Show how to practice different environmentally sustainable practices

Becoming a Professional in the 21st Century Duration: 1 Hour

4. Discuss 21st-century skills.

5. Display a positive attitude, self-motivation, problem-solving, time management skills and continuous learning mindset in different situations.

Basic English Skills Duration: 2 Hours

6. Use appropriate basic English sentences/phrases while speaking

Communication Skills Duration: 4 Hours

7. Demonstrate how to communicate in a well-mannered way with others.

8. Demonstrate working with others in a team

Diversity & Inclusion Duration: 1 Hour

9. Show how to conduct oneself appropriately with all genders and PwD

10. Discuss the significance of reporting sexual harassment issues in time

Financial and Legal Literacy Duration: 4 Hours

11. Discuss the significance of using financial products and services safely and securely.

12. Explain the importance of managing expenses, income, and savings.

13. Explain the significance of approaching the concerned authorities in time for any exploitation as per legal rights and laws

Essential Digital Skills Duration: 3 Hours

14. Show how to operate digital devices and use the associated applications and features, safely and securely

15. Discuss the significance of using the internet for browsing, and accessing social media platforms, safely and securely

Entrepreneurship Duration: 7 Hours

16. Discuss the need for identifying opportunities for potential business, sources for arranging money and potential legal and financial challenges

Customer Service Duration: 4 Hours

17. Differentiate between types of customers

18. Explain the significance of identifying customer needs and addressing them

19. Discuss the significance of maintaining hygiene and dressing appropriately

Getting ready for Apprenticeship & Jobs Duration: 2 Hours

20. Create a biodata

21. Use various sources to search and apply for jobs

22. Discuss the significance of dressing up neatly and maintaining hygiene for an interview

23. Discuss how to search and register for apprenticeship opportunities

Module 10: Juice and Squash Production

Mapped to FIC/N0103, v4.0

Terminal Outcomes:

- Describe the procedures for receiving, washing, sorting, and slicing fruits to prepare them for juice extraction.
- Explain the techniques used to extract juice from various fruits, ensuring maximum yield and quality.
- Explain the process of pasteurizing fruit juice to ensure safety and prolong shelf life.
- Demonstrate how to clarify fruit juice using appropriate methods and equipment.
- Show the process of preparing squash from fruit juice.

Duration (in hours): 20:00	**Duration (in hours): 20:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain food safety and hygiene standards for fruit juice production. • Describe the varieties of raw materials used for fruit juice and squash production. • Discuss the use of modern equipment for fruit preparation, such as fruit washers, sorting machines, peeling machines, and slicers/dicers. • Describe the use of modern fruit juice extraction equipment, such as fruit crushers, pulpers, belt presses, hydraulic presses, centrifugal juicers, and finishers. • Explain the use of tools for manual fruit juice extraction, such as hydraulic juice presses, lever-operated citrus presses, and commercial-grade masticating juicers. • Discuss the process of aroma stripping during fruit juice production. • Explain new technologies relevant to fruit juice extraction, such as Centrifugal Juicers, Ultrasonic Juice Extraction, Membrane Filtration Systems, Supercritical CO2 Extraction, High-Pressure Processing (HPP), and Vacuum Evaporation.	• Demonstrate the process of checking the weight and quality of fruits based on appearance, colour, texture, and maturity upon receipt. • Show how to effectively wash and rinse fruits to remove dirt and impurities. • Demonstrate the process of inspecting and removing damaged or unsuitable fruits according to standard procedures. • Show how to cut or grate fruits to the required size and collect them hygienically for further processing. • Demonstrate the process of removing stems, seeds, and peels from various fruits like grapes and citrus fruits. • Show how to grind fruits such as apples and pears into appropriate gratings. • Demonstrate how to determine and apply the correct enzymes for different types of fruits. • Show how to collect and filter extracted juice to achieve desired quality standards. • Demonstrate the process of concentrating fruit juice and managing aroma recovery.

• Describe the importance of ensuring the efficiency of pasteurization for food safety and quality. • Explain the methods to evaluate pasteurization effectiveness, including enzyme activity tests, microbiological testing, monitoring Hydroxymethylfurfural (HMF) levels, and rigorous time and temperature monitoring. • Discuss the use of pasteurizers and heat exchangers for pasteurizing fruit juice. • Describe the use of modern equipment for fruit juice clarification, such as ultrafiltration units and membrane filtration systems. • Explain new technologies relevant to juice clarification, such as Ultrasonic Homogenizers. • Discuss the use of modern squash production equipment, such as mixing tanks, homogenizers, and blending tanks. • Explain the use of relevant tools for manual squash production.	• Show how to pasteurize fruit juice at precise temperatures and process parameters. • Demonstrate how to cool pasteurized juice to required storage temperatures while ensuring hygiene. • Demonstrate the process of calculating and adding enzymes for effective juice clarification. • Show how to use equipment to remove fine particles and achieve clear juice. • Demonstrate how to check juice quality based on appearance, flavour, and taste. • Show how to prepare samples for lab analysis to ensure compliance with standards. • Show how to prepare sugar syrup with accurate sugar and acid quantities. • Demonstrate the process of filtering syrup to remove unwanted particles. • Show how to blend juice concentrate, water, syrup, acids, preservatives, colour, and flavour to specification. • Demonstrate how to pasteurize and cool squash blend under controlled conditions. • Show how to check squash quality and coordinate lab analysis for compliance. • Demonstrate the process of transferring finished products into filling tanks at correct levels.
Classroom Aids	
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Thermometer (Digital), Beakers, Measuring Cylinder, Measuring Flask, Weighing Balance (Digital), Brix Meter/Refractometer, Fruit Tray, Cutting Knives, Mixer/Electric Mixer, Fruit Slicing Machine, Pulper, Peeler, Steam Jacketed Kettle, Slicer, Pasteurizer, Sterilizer, Processing Unit (Machine	

Specific), Conveyor and Processing Belts Clarifier, Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Safety Manual.

Module 11: Packaging and Post-Production

Mapped to FIC/N0103, v4.0

Terminal Outcomes:

- Explain the process of filling, packing and storing juice and squash.
- Show how to pack, seal, and label juice and squash according to specified procedures.
- Demonstrate the post-production activities in accordance with health and safety guidelines.

Duration (in hours): 10:00	**Duration (in hours): 10:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the procedures for transferring finished juice and squash products into filling tanks and ensuring they reach the recommended levels. • Explain the steps involved in loading packing materials such as Tetra packs, glass bottles, and plastic containers into packaging machines, and securing sealing materials and labels in the respective machines. • List the types and categories of packaging materials used in fruit juice and squash production. • Discuss the use of relevant packing, sealing, and labelling machineries in fruit juice and squash production. • Explain the applicable requirements and standards for packing, sealing, and labelling in fruit juice and squash production. • Describe the storage requirements and procedures for fruit juice and squash raw materials, packaging materials, and products. • Discuss the Clean-in-Place (CIP) and Clean-out-of-Place (COP) procedures in fruit juice and squash production. • Explain the safe use and storage of relevant sanitizers and disinfectants. • Discuss the laws and regulations	• Demonstrate the process of transferring finished juice and squash products into filling tanks up to the recommended levels. • Show how to load various packing materials into packaging machines and ensure sealing materials and labels are correctly positioned. • Demonstrate how to set the appropriate filling volumes on filling machines following company standards. • Show how to set the date coding machine with batch numbers, manufacturing dates, expiry dates, etc. • Demonstrate the process of packing, sealing, and labelling juice and squash products according to specified procedures. • Show how to periodically check the weight of packed products to ensure they meet applicable standards. • Demonstrate how to attach straws to packaged products as required during the packaging process. • Show how to store packed and labelled products in designated storage areas under optimal conditions, using appropriate storage accessories. • Demonstrate the process of reporting discrepancies or concerns about packing

applicable to food product packaging and labelling.	and labelling to the department supervisor for prompt action. • Show how to clean work areas, tools, equipment, and machinery using approved sanitizers. • Demonstrate how to collect and dispose of waste materials generated during production. • Show how to complete necessary documentation related to production processes. • Demonstrate the filling and packing of finished juice and squash products. • Show how to label and seal packaged products according to standards. • Show how to operate sealing and labelling machines following standard procedures. • Demonstrate the procedure to store finished products in designated storage areas. • Show how to store packed products under optimal conditions and report any issues promptly.

Classroom Aids
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films
Tools, Equipment and Other Requirements
Filling Machine, Sealing Machines, Labeling Machines, Packaging Materials, Work Uniforms, Protective Head and Hair Covering, Safety and Waterproof Footwear, Containers for Storing Packed Food, Utensils for Handling Food, Lifting Aids, Eye and Facial Protection, Coats and Aprons, Protective Hand and Arm Coverings, Ear Plugs or Muffs, Mesh Aprons, Containers.

Module 12: Preparation and Processing of Jam, Jelly, and Ketchup

Mapped to FIC/N0111, v3.0

Terminal Outcomes:

- Explain the process of preparing jam and jelly, including ingredient selection and cooking techniques.
- Describe the steps involved in preparing ketchup, ensuring proper consistency and flavor balance.

Duration (in hours): 20:00	**Duration (in hours):** 20:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the functions of different ingredients used in ketchup, jam, and jelly production. • Describe the operating procedures for cooking kettles, including temperature and pressure control. • Determine the methods to test the viscosity of ketchup and achieve the desired consistency. • Explain the SOP for clarifying fruit juice and the techniques used to remove pulp and sediments. • Discuss the process for preparing clarified fruit juice squash, including ingredient proportioning and quality checks. • Describe the steps involved in transferring finished products to the filling tank or hopper for packaging. • Elucidate the inspection and quality control procedures for maintaining product consistency, color, and texture. • Explain the calibration process for testing equipment like refractometers and viscometers. • Discuss the FSSAI guidelines for maintaining the required fruit content in ketchup and fruit-based spreads.	• Demonstrate how to transfer the required quantity of fruit pulp or juice into the cooking kettle/tank and heat it to the specified temperature. • Show how to stir the pulp continuously to prevent sticking or scorching while monitoring pressure and temperature gauges. • Demonstrate how to ensure compliance with FSSAI guidelines for fruit content in jam and jelly. • Show how to prepare and add the pectin/gelatin solution uniformly into the pulp/juice as per the formulation chart. • Demonstrate how to operate the cooker by setting the correct temperature and pressure controls. • Show how to observe the cooking process, check Brix levels using a refractometer, and assess the product quality. • Demonstrate how to collect samples and send them for quality testing. • Show how to transfer the heated jam/jelly to the hopper for packaging and mold jellies with proper shape and size. • Demonstrate how to regulate cooling conveyor speed, identify defective jellies, and handle contaminated products as per safety guidelines. • Show how to transfer approved jellies to the packaging machine. • Show how to transfer tomato pulp/puree

	into the cooking kettle and heat it while stirring to prevent sticking. • Demonstrate how to measure and add ingredients (sugar, salt, vinegar) in the correct sequence. • Show how to assess the pre-cooked ketchup for consistency, color, and compliance with FSSAI fruit content guidelines. • Demonstrate how to check Brix levels, calibrate a refractometer, and ensure the correct ketchup consistency. • Show how to take a sample for lab analysis and transfer the final product into the packaging hopper.
Classroom Aids	
Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Fruit Washer, Peeler, Fruit Pulper, Juice Extractor, Clarifier, Filter, Pasteurizer, Steam Jacketed Kettles, Protective Gloves, Head Caps, Lab Coat, Safety Goggles, Safety Boots, Mouth Masks, sanitizer	

Module 13: Filling, Packing, and Post-Production Maintenance

Mapped to FIC/N0111, v3.0

Terminal Outcomes:

- Discuss the procedures for filling and packing jam, jelly, and ketchup while maintaining hygiene and quality standards.
- Elucidate the importance of post-production cleaning and regular maintenance of equipment for efficient operation.

Duration (in hours): 10:00	**Duration (in hours): 10:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the procedures for operating packaging machines, including filling, sealing, and labeling. • Describe the SOP for loading labels into labeling machines and ensuring proper alignment. • Discuss the steps to set up a date coding machine for batch number, date of manufacture, and expiry details. • Elucidate the importance of food safety, hygiene, and sanitation protocols in production facilities. • Explain the SOP for washing and sanitizing bottles and packaging materials before filling. • Describe the post-production cleaning and maintenance procedures for equipment, including CIP systems. • Determine the methods for identifying and handling packaging material defects. • Explain the preventive maintenance and troubleshooting techniques for packaging machinery. • Discuss the waste management, recycling, and disposal procedures for defective or excess products.	• Show how to transfer heated jam, jelly, or ketchup into the packaging machine and set parameters for filling. • Demonstrate how to inspect packaging materials, sealing components, and the final filled containers for compliance. • Show how to operate the packaging machine, check container weight, and inspect for sealing defects. • Demonstrate how to spray water for cooling, pass bottles through the drying tunnel, and load labels into the labeling machine. • Show how to inspect labels for accuracy and properly pack labeled products for storage. • Demonstrate how to perform preventive maintenance of packaging machines and report malfunctions. • Demonstrate how to clean the work area, machinery, and tools using approved sanitizers. • Show how to perform Clean-in-Place (CIP) procedures for automated cleaning. • Demonstrate how to check and perform minor repairs on machinery and follow scheduled maintenance plans. • Show how to document cleaning, repair, and maintenance activities accurately.
Classroom Aids	

Training Kit - Facilitator's Guide, Participant's Handbook, Presentations and Software, Whiteboard, Marker, Projector, Laptop, Video Films
Tools, Equipment and Other Requirements
Packaging Machines, Protective Gloves, Head Caps, Lab Coat, Safety Goggles, Safety Boots, Mouth Masks, sanitizer

Module 14: On-the-Job Training

Mapped to Fruit Pulp Junior Processor

Mandatory Duration: 90:00	Recommended Duration: 00:00
Location: On-Site	

Terminal Outcomes

- Demonstrate the standard practices to be followed while planning for production.
- Show how to perform tasks required to prepare for the production process.
- Demonstrate the correct method for washing and sorting fruits before consumption or processing.
- Show how to peel, de-seed, or de-stone fruits and explain its impact on food preparation.
- Demonstrate the process of fruit pulp extraction and explain its significance in food processing.
- Show how to carry out the key steps involved in pre-cooking activities for fruit-based products.
- Demonstrate the procedure for aseptic sterilization and explain its role in maintaining fruit pulp quality.
- Show how to identify key factors to consider while packing fruit pulp to ensure safety and longevity.
- Demonstrate the process of canning fruit pulp and explain its benefits for preservation.
- Show how to perform post-production cleaning to maintain hygiene and product quality.
- Demonstrate the key steps involved in equipment maintenance after fruit pulp processing.
- Show how to follow personal hygiene and GMP practices at the workplace.
- Demonstrate the tasks to be performed to ensure personal hygiene and GMP compliance at the workplace.
- Show how to implement food safety practices effectively at the workplace.
- Demonstrate the steps to be followed for implementing food safety procedures efficiently.
- Show how to receive, wash, sort, and slice fruits to prepare them for juice extraction.
- Demonstrate the techniques used to extract juice from various fruits while ensuring maximum yield and quality.
- Show how to pasteurize fruit juice to ensure safety and prolong shelf life.
- Demonstrate the process of clarifying fruit juice using appropriate methods and equipment.
- Show how to prepare squash from fruit juice following the correct procedure.
- Demonstrate the process of filling, packing, and storing juice and squash properly.
- Show how to pack, seal, and label juice and squash according to specified procedures.
- Demonstrate the post-production activities in accordance with health and safety guidelines.
- Show how to prepare jam and jelly, including ingredient selection and cooking techniques.
- Demonstrate the steps involved in preparing ketchup while ensuring proper consistency and flavor balance.
- Show how to fill and pack jam, jelly, and ketchup while maintaining hygiene and quality standards.
- Demonstrate the importance of post-production cleaning and regular maintenance of equipment for efficient operation.

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialisation**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
B.Sc / B.Tech/BE	Food Technology or Food Engineering or Food science	2	Food processing	1	Food Processing	
M.Sc/ M.Tech/ ME	Food Technology or Food Engineering/ Food Science	1	Food processing	1	Food Processing	

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Fruit Pulp Junior Processor" mapped to QP: "FIC/Q0106, v5.0". Minimum accepted score is 80%.	Recommended that the Trainer is certified for the Job Role: "Trainer (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2601, v2.0". The minimum accepted score as per MEPSC guidelines is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
B.Sc / B.Tech/BE	Food Technology or Food Engineering or Food Science	3	Food processing	1	Food Processing	
M.Sc/ M.Tech/ ME	Food Technology or Food Engineering or Food Science	2	Food processing	1	Food Processing	

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Fruit Pulp Junior Processor" mapped to QP: "FIC/Q0106, v5.0". Minimum accepted score is 80%.	Certified for the Job Role: "Assessor (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2701, v2.0", with a minimum score of 80%.

Assessment Strategy

This section includes the processes involved in identifying, gathering and interpreting information to evaluate the learner on the required competencies of the program.

Assessment will be based on the concept of Independent Assessors empanelled with Assessment Agencies, identified, selected, trained and certified on Assessment techniques. These Assessors would be aligned to assess as per the laid down criteria.

Assessment Agency would conduct assessment only at the training centres of Training Partner or designated testing centers authorized by FICSI.

Ideally, the assessment will be a continuous process comprising of three distinct steps:

A. Mid-term assessment
B. Term/Final Assessment

Each National Occupational Standard (NOS) in the respective QPs will be assigned weightage. There in each Performance Criteria in the NOS will be assigned marks for theory and/or practical based on relative importance and criticality of function.

This will facilitate preparation of question bank / paper sets for each of the QPs. Each of these papers sets/question banks created by the Assessment Agency will be validated by the industry subject matter experts through FICSI, especially with regard to the practical test and the defined tolerances, finish, accuracy etc.

The following tools are proposed to be used for final assessment:

i. Written Test: This will comprise of (i)True/False Statements, (ii)Multiple Choice Questions, (iii)Matching Type Questions. Online system for this will be preferred.
ii. Practical Test: This will comprise a test job to be prepared as per project briefing following appropriate working steps, using necessary tools, equipment and instruments. Through observation it will be possible to ascertain candidate's aptitude, attention to details, quality consciousness etc. The end product will be measured against the pre-decided MCQ filled by the Assessor to gauge the level of his skill achievements.
iii. Structured Interview: This tool will be used to assess the conceptual understanding and the behavioural aspects as regards the job role and the specific task at hand.

On the Job:

1. Each module (which covers the job profile of Fruit Pulp Junior Processor) will be assessed separately.

2. The candidate must score 70% in each module to successfully complete the OJT.

3. Tools of Assessment that will be used for assessing whether the candidate is having desired skills and etiquette of dealing with customers, understanding needs & requirements, assessing the customer and perform Soft Skills effectively:

- Videos of Trainees during OJT
- Answer Sheets of Question Banks
- Assessing the Logbook entries of Trainees at Employer location
- Employer Performance Feedback.

4. Assessment of each Module will ensure that the candidate is able to:

- Carry out production of fortified food
- Work effectively and efficiently as per schedules and timelines.
- Escalate the problem to appropriate authority.
- Implement safety practices.
- Optimize the use of resources to ensure less wastage and maximum conservation.

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective, or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do it upon the completion of the training.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
NCVET	National Council for Vocational Education and Training
NVEQF	National Vocational Educational Qualification Framework
FICSI	Food Industry Capacity & Skill Initiative
QP	Qualification Pack
MC	Model Curriculum
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
NCO	National Classification of Occupations
ES	Employability Skills
HACCP	Hazard Analysis and Critical Control Points
FSSAI	Food Safety and Standards Authority of India
GMPs	Good Manufacturing Practices
GHP	Good Hygiene Practices
PPE	Personal Protective Equipment
SOP	Standard Operating Procedure
QMS	Quality Management System
COP	Clean Out of Place
CIP	Clean In Place
SCADA	Supervisory Control and Data Acquisition
PLC	Programmable Logic Controller