



Model Curriculum

QP Name: Squash and Juice Processing Technician

QP Code: FIC/Q0101

QP Version: 3.0

NSQF Level: 3

Model Curriculum Version: 3.0

Food Industry Capacity and Skill Initiative (FICSI)
Shriram Bhartiya Kala Kendra (3rd Floor)
Copernicus Marg, New Delhi 110001

Phone: 9711260230

Table of Contents

Training Parameters	3
Program Overview.....	4
Compulsory Modules	5
Module Details	7
Module 1: Introduction to the training program and overview of the food processing industry	7
Module 2: Prepare and maintain work area and process machineries for squash and juice processing.....	8
Module 3: Prepare for production of squash and juice	9
Module 4: Produce squash and juice	11
Module 5: Complete documentation and record keeping	12
Module 6: Food safety, hygiene and sanitation.....	13
Module 7: Employability Skills.....	14
Annexure	16
Trainer Requirements.....	16
Assessor Requirements	18
Assessment Strategy	19
Glossary.....	20
Acronyms and Abbreviations	21

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-2015/7514.0700
Minimum Educational Qualification and Experience	1. Grade 8 pass and pursuing continuous schooling in regular school with vocational subject OR 2. 8th grade pass with 1-year of relevant experience OR 3. 5th grade pass with 4 years of relevant experience OR 4. Ability to read and write with 5 years relevant experience OR 5. Previous relevant qualification of NSQF Level 2 with 1 years of relevant experience OR 6. Previous relevant qualification of NSQF Level 2.5 with 6 months of relevant experience
Pre-Requisite License or Training	Not Applicable
Minimum Job Entry Age	18 years
Last Reviewed On	30/09/2021
Next Review Date	29/09/2024
NSQC Approval Date	30/09/2021

QP Version	3.0
Model Curriculum Creation Date	30/07/2021
Model Curriculum Valid Up to Date	29/09/2024
Model Curriculum Version	3.0
Minimum Duration of the Course	270 Hours
Maximum Duration of the Course	270 Hours

Program Overview

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

Training Outcomes

At the end of the program, the participants will be able to:

- Prepare and maintain work area and process machineries for squash and juice processing.
- Prepare for production of squash and juice.
- Produce squash and juice.
- Document and maintain record related to production of squash and juice.
- Follow and maintain food safety and hygiene in the work environment.

Compulsory Modules

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

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
FIC/N0101 Prepare and maintain work area and process machineries for squash and juice processing NOS Version No.: 1.0 NSQF Level: 4	10:00 Hours	20:00 Hours	00:00 Hours	00:00 Hours	30:00 Hours
Module 1: Introduction to the training program and overview of the food Processing industry	02:00 Hours	00:00 Hours	00:00Hours	00:00 Hours	02:00 Hours
Module 2: Prepare and maintain work area and process machineries for squash and juice processing	08:00 Hours	20:00 Hours	00:00 Hours	00:00 Hours	28:00 Hours
FIC/N0102 Prepare for production of squash and juice NOS Version No.: 1.0 NSQF Level: 4	20:00 Hours	40:00 Hours	00:00Hours	00:00 Hours	60:00 Hours
Module 3: Prepare for production of squash and juice	20:00 Hours	40:00 Hours	00:00Hours	00:00 Hours	60:00 Hours
FIC/N0103 Produce squash and juice NOS Version No.: 1.0 NSQF Level: 4	40:00 Hours	50:00 Hours	00:00 Hours	00:00 Hours	90:00 Hours
Module 4: Produce squash and juice	40:00 Hours	50:00 Hours	00:00 Hours	00:00 Hours	90:00 Hours

FIC/N0104 Complete documentation and record keeping related to production of squash and juice NOS Version No.: 1.0 NSQF Level: 4	10:00 Hours	20:00 Hours	00:00 Hours	00:00 Hours	30:00 Hours
Module 5: Complete documentation and record keeping	10:00 Hours	20:00 Hours	00:00 Hours	00:00 Hours	30:00 Hours
FIC/N9001 Ensure Food safety, hygiene and sanitation for processing food product NOS Version No.: 1.0 NSQF Level: 4	10:00 Hours	20:00 Hours	00:00 Hours	00:00 Hours	30:00 Hours
Module 6: Food safety, Hygiene and sanitation	10:00 Hours	20:00 Hours	00:00 Hours	00:00 Hours	30:00 Hours
DGT/VSQ/N0101 Employability Skills NOS Version No.: 1.0 NSQF Level: 2	12:00 Hours	18:00 Hours	00:00Hours	00:00Hours	30:00 Hours
Module 7 : Employability skills	12:00 Hours	18:00 Hours	00:00Hours	00:00Hours	30:00 Hours
Total Duration	102:00 Hours	168:00 Hours	00:00 Hours	00:00 Hours	270:00 Hours

Module Details

Module1: Introduction to the training program and overview of the food processing industry

Mapped to FIC/N0101 v1.0

Terminal Outcomes:

- Discuss the food processing industry in brief.
- List the opportunities available to squash and juice processing technician in the food industry.

Duration: 02:00	Duration: 00:00
Theory–Key Learning Outcomes	Practical–Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss how to introduce each other and build rapport with fellow participants and the trainer. • List the various subsectors of food processing industry. • Define fruits and vegetables processing. • Discuss roles and responsibilities • Explain how to identify nature and availability of job opportunities. • List various sub sectors of beverage industry • List the various fruit drinks. • Define fruit juice and its types. • List the various fruits used for making squash and juice. 	
Classroom Aids:	
NIL	
Tools, Equipment and Other Requirements	
NIL	

Module 2: Prepare and maintain work area and process machineries for squash and juice processing

Mapped to FIC/N0101 v1.0

Terminal Outcomes:

- Prepare work area and process machineries required for squash and juice processing.

Duration: 08:00	Duration: 20:00
Theory– Key Learning Outcomes	Practical– Key Learning Outcomes
<ul style="list-style-type: none"> • List the materials and equipment used in the cleaning and maintenance of the work area • List the common detergents and sanitizers used in cleaning work area and machineries • Describe the methods of cleaning and sanitization • Explain the method of managing and disposing waste material • Describe the functions to be carried out before starting production • Explain the maintenance procedure to be followed before starting production • Explain the different types of maintenance procedures 	<ul style="list-style-type: none"> • Identify different equipment used in squash and juice processing. • Demonstrate the use of different tools and machineries used for squash and juice. • Demonstrate the appropriate method for cleaning and maintaining a work area to ensure the work area is safe and hygienic for food processing. • Identify the set of machines and tools required for production. • Practice cleanliness of the process machineries required for production using recommended sanitizers.
Classroom Aids:	
Nil	
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, Clarifier, Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Safety Manual.	

Module 3: Prepare for production of squash and juice

Mapped to FIC/N0102, v1.0

Terminal Outcomes:

- Discuss how to plan production schedule and sequence
- Describe organizing raw materials.
- Define the method used for storing the raw materials for later use.

Duration: 20:00	Duration: 40:00
Theory– Key Learning Outcomes	Practical– Key Learning Outcomes
<ul style="list-style-type: none"> • State how to plan the production schedule as per organizational standards and instructions • Discuss how to organize the raw materials, packaging materials, manpower, equipment and machineries for the scheduled production • State the methods for storing raw materials for later use • State how to plan the production sequence to maximize capacity, utilization of resources, manpower and machinery • Explain how to calculate batch size and prioritize urgent orders based on the production schedule and machine capacity • Discuss how to organize quality raw material as per production process and company standards • Explain about preparation of the raw material for production • List the effect of manhandling of fruits on juice. 	<ul style="list-style-type: none"> • Use basic mathematics for various calculations in day-to-day processes • Identify the raw materials required for production as per production schedule and formation • Inspect the conformance of raw material quality to company standards • Check the raw material quality and grade.
Classroom Aids:	

NIL
Tools, Equipment and Other Requirements
<p>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, Clarifier, Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Safety Manual.</p>

Module 4: Produce squash and juice

Mapped to FIC/N0103, v1.0

Terminal Outcomes:

- Demonstrate the processing of squash and juice.
- Demonstrate the method of clarifying fruit juice and packaging.

Duration: 40:00	Duration: 50:00
Theory– Key Learning Outcomes	Practical– Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the processing of Squash and Juice. • State the procedures used to extract the fruit and vegetable juice/pulp. • Describe pasteurization process for fruit juice. • List the quality parameters of squash and juice. • Explain aseptic packaging in fruit processing industry. • State the methods for storing raw materials for later use. • Explain the process of storing packaged fruit pulp. • Explain quality parameters to be checked for juice and squash 	<ul style="list-style-type: none"> • Demonstrate the pre-extraction processes of fruits. • Demonstrate the method of production and clarifying fruit juice. • Demonstrate the process of packaging squash and juice. • Demonstrate quality checks to be performed • Demonstrate the process of cleaning the work area and machines after production.
Classroom Aids:	
NIL	
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, Clarifier, Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Safety Manual.	

Module 5: Complete documentation and record keeping

Mapped to FIC/N0104, v1.0

Terminal Outcomes:

- Document and maintain records related to squash and juice processing.

Duration: 10:00	Duration: 20:00
Theory– Key Learning Outcomes	Practical– Key Learning Outcomes
<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. 	<ul style="list-style-type: none"> Demonstrate the process of documenting records of production plan, process parameters and finished products.
Classroom Aids:	
NIL	
Tools, Equipment and Other Requirements	
Food safety manual, Log books.	

Module 6: Food safety, hygiene and sanitation

Mapped to FIC/N9001, v1.0

Terminal Outcomes:

- Discuss the importance of health and safety at the workplace.
- Demonstrate the task to be performed for ensuring health and safety at the workplace.

Duration: 10:00	Duration: 20:00
Theory–Key Learning Outcomes	Practical–Key Learning Outcomes
<ul style="list-style-type: none"> • State the importance of safety, hygiene and sanitation in the food industry. • Discuss about the industry standards to maintain a safe and hygiene workplace. • Explain GMP and HACCP principles • Describe Risk and hazard management • Explain different types of hazards 	<ul style="list-style-type: none"> • Demonstrate the safety practices to be followed in the work area. • Demonstrate the personal hygiene to be followed in the work area. • Apply HACCP principles to eliminate food safety hazards in the process and products.
Classroom Aids:	
NIL	
Tools, Equipment and Other Requirements	
Protective gloves, head caps, aprons, safety goggles, safety boots, mouth covers, sanitizer, safety manual, logbooks etc.	

Module 7: Employability skills

Mapped to DGT/VSQ/N0101, v 1.0

Terminal Outcomes:

- Describe the traits of individual at workplace
- Demonstrate employability and entrepreneurship skills at workplace

Duration: 12:00	Duration: 18:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the importance of Employability Skills in meeting the job requirements. • Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen. • Discuss 21st century skills. • Display positive attitude, self - motivation, problem solving, time management skills and continuous learning mindset in different situations. • Discuss the significance of reporting sexual harassment issues in time • Discuss the significance of using financial products and services safely and securely. • Explain the significance of approaching the concerned authorities in time for any exploitation as per legal rights and laws • Explain the importance of managing expenses, income, and savings. • Discuss the significance of using internet for browsing, accessing social media platforms, safely and securely • Discuss the need for identifying opportunities for potential business, 	<ul style="list-style-type: none"> • Show how to practice different environmentally sustainable practices • Use appropriate basic English sentences/phrases while speaking • Demonstrate how to communicate in a well -mannered way with others • Demonstrate working with others in a team • Show how to conduct oneself appropriately with all genders and PwD • Show how to operate digital devices and use the associated applications and features, safely and securely • Create a biodata • Use various sources to search and apply for jobs

<p>sources for arranging money and potential legal and financial challenges</p> <ul style="list-style-type: none"> • Differentiate between types of customers • Explain the significance of identifying customer needs and addressing them • Discuss the significance of maintaining hygiene and dressing appropriately • Discuss the significance of dressing up neatly and maintaining hygiene for an interview • Discuss how to search and register for apprenticeship opportunities 	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Computer/laptop.	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
B. Sc or graduate/B. Tech/BE	Food technology or food engineering	3	Food processing	1	Food processing	
M. Sc /M. Tech/ME	Food technology or food engineering	2	Food processing	1	Food processing	
Diploma /certificate course	(Food Technology / Food Engineering /packaging/Home science, or allied sector	4	Food processing	1	Food processing	

Trainer Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Squash and Juice Processing Technician" mapped to QP: "FIC/Q0101, v3.0". Minimum accepted score is 80%.	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.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
M. Sc/M. Tech/ME	Food technology or food engineering	2	Food processing	1	Food processing	
B. Sc or graduate/B. Tech/BE	Food technology/ Home Science	3	Food processing	2	Food processing	
Diploma	Hotel management/ Food Science/ Home Science	4	Food processing	2	Food processing	

Assessor Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Squash and Juice Processing Technician" mapped to QP: "FIC/Q0101, v3.0". Minimum accepted score is 80%.	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.

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 bank so 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.

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 onsite
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 psycho motor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do 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
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
HACCP	Hazard Analysis and Critical Control Points
GMP	Good Manufacturing Practices
GHP	Good Hygiene Practices