Model Curriculum

Standalone NOS: Introduction to Jam Processing & Packaging

NOS Code: FIC/N0211

Version: 1.0

NSQF Level: 3

Model Curriculum Version: 1.0

Food Industry Capacity and Skill Initiative (FICSI)
Shriram Bharatiya Kala Kendra (3rd Floor)
Copernicus Marg, New Delhi 110001, Phone: 9711260230

Table of Contents

Training Parameters

Sector	Food Processing
Sub-Sector	Fruits and Vegetables
Occupation	Processing - Fruits & Vegetables
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7514.1000
Minimum Educational Qualification and Experience	1. 10th Grade pass OR 2. 8th Grade pass with 3 years of relevant experience in Food Processing OR 3. Previous relevant Qualification of NSQF Level 2.5 with 1.5 years of experience in Food Processing OR 4. Previous relevant Qualification of NSQF Level 2 with 3 years of experience in Food Processing
Pre-Requisite License or Training	NA
Minimum Job Entry Age	16 years
Last Reviewed On	18/02/2025
Next Review Date	17/02/2028
NSQC Approval Date	18/02/2025
NOS Version	1.0
Model Curriculum Creation Date	10/07/2024
Model Curriculum Valid Up to Date	17/02/2028
Model Curriculum Version	1.0
Minimum Duration of the Course	90 hours
Maximum Duration of the Course	90 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:

- Maintain the work area and process machinery to produce jam
- Prepare raw material to produce jam
- Document and maintain records related to jam processing
- Apply the food safety and hygiene practices at the workplace

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/N0211:Jam Processing NOS Version No.:1.0 NOS Level: 3	**30:00 Hours**	**60:00 Hours**	**00:00 Hours**	**00:00 Hours**	**90:00 Hours**
Module 1: Prepare for production	05:00 Hours	10:00 Hours	00:00 Hours	00:00 Hours	15:00 Hours
Module 2: Processing of jams	20:00 Hours	40:00 Hours	00:00 Hours	00:00 Hours	60:00 Hours
Module 3: Food Safety Practices	03:00	10:00	00:00	00:00	13:00
Module 4: Basics of Entrepreneurial Skills	02:00	00:00	00:00	00:00	02:00
Total Duration	**30:00 Hours**	**60:00 Hours**	**00:00 Hours**	**00:00 Hours**	**90:00 Hours**

Module Detail

Module 1: Prepare for production
Mapped to FIC/N0211 v 1.0

Terminal Outcomes:

- Discuss the standard practices to be followed for production
- Demonstrate the tasks to be performed at the workplace for planning the production

Duration: 05*:00*	**Duration**: 10*:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Elucidate the production planning process. • Discuss analysis and interpretation of various process charts, product flow charts, etc. • Explain the resource management, Vendor and supplier Approvals and timely audits. • List down equipment type and its use. • Explain the capacity utilization calculation. • Discuss the organizational policies and SOP on cleaning and housekeeping • List down the basic concepts of food safety and hygiene. • Describe the operating procedure and general maintenance of food production machinery. • State waste management procedures. • List down the methods to inspect tools, equipment, and machinery. • Discuss the procedure to allot work or responsibility to the team.	• Apply work requirements by obtaining instructions from the supervisor. • Instructions: process chart, product flow chart, formulation chart, etc. • Prepare, plan and prioritize tasks as per work schedule Tasks: inspect, clean, maintain, verify the area and tools, etc. • Calculate the manpower and material requirements as per the work requirement Material: raw materials and packaging materials. • Show the required quantity of raw materials, packaging materials, equipment, and manpower for production. • Demonstrate capacity utilization of machinery to the processing time, production order, and batch size for each product. • Perform cleaning and maintain the work area as per organizational procedures. • Perform cleaning and maintain the machines and tools and sanitize them as per the organization's

	specifications and standards. • Show disposal of the waste material at designated place safely. • Display the tools, equipment, and machinery to ascertain suitability for use. • Conduct role play to report information such as faulty tools and equipment to the concerned authority.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Process related documents, list of raw materials, tools, equipment and machinery, organizational documents, and logbook.	

Module 2: Processing of jams

Mapped to FIC/N0211 v 1.0

Terminal Outcomes:

- Discuss the stages involved in the production of jam
- Demonstrate the tasks to be performed for producing jam

Duration: *20:00*	**Duration**: *40:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the intended use of the various ingredients used in the production of jam • Discuss the chemical and physical principles behind ozone washing and how ozone (O3) is generated, its properties, and its effectiveness as a sanitizing agent. • Discuss the health and safety considerations associated with the use of ozone in food processing, including potential hazards and safety measures to protect workers. • Discuss the use of spray washing in cleaning raw materials, equipment, and processing areas in food production. • Describe the principles of spray washing, including the types of nozzles and sprays used, the mechanics of spray delivery, and the parameters affecting the efficiency of spray washing (e.g., pressure, temperature, and detergent type). • Explain the principles and techniques of food preservation relevant to various types of jams • Describe the step-by-step processes involved in making jam • Describe various automation solutions tailored to specific tasks in food production, including ingredient mixing, filling, sealing, labeling, and packaging • Describe different types, functions and benefits of automated equipment used in jam processing • Discuss the role of digital technologies, including sensors, IoT devices, data analytics software, and cloud computing in modern food production.	• Demonstrate how to plan the production process. • Demonstrate the raw material storage, identification, properties, and then issuance/ weighing. • Perform a check if all the machinery is clean and in good working condition. • Demonstrate the assembly of all components of machines. • Perform a pre-check on all machinery. • Check the quality of fruits and vegetables • Perform the washing of fruits and vegetables before they are processed. • Practice adjusting ozone concentration levels and flow rates to achieve optimal sanitizing effects. • Perform pulping and juice extraction from fruits and vegetables. • Practice setting up and calibrating equipment for tasks such as ingredient mixing, filling, sealing, labeling, and packaging. • Demonstrate the use of production equipment such as cookers, mixers, sterilizers, and filling machines, ensuring proper operation and maintenance for efficient production. • Demonstrate the technique/ process of preparing jams • Demonstrate the packaging and analyze the quality of the finished product.

• Study how digital technologies are applied in the context of jam production • Explain the specific uses of sensors for monitoring production parameters, IoT devices for real-time data transmission, and data analytics software for optimizing production processes. • Describe the importance of monitoring key production parameters such as temperature, humidity, pH, viscosity, and filling levels. • Describe how digital solutions can be used to optimize production processes. • Discuss quality control measures and standards applicable to the production of jam according to FSSAI.	• Conduct quality tests on the finished products, such as pH testing, viscosity measurements, and Sensory evaluation, making necessary adjustments to meet product specifications. • Demonstrate cleaning the machinery used with recommended sanitizers following the CIP (clean-in-place) procedure. • Demonstrate the application of food safety and hygiene protocols in the production environment, including proper cleaning of workspaces and equipment using recommended cleaning agents and sanitizers, wearing protective gear, and adhering to sanitary procedures.
Classroom Aids	
Board/Chart paper/ Laptop and Projector, Trainer Handbook, Participant handbook, etc.	
Tools, Equipment and Other Requirements	
Fruit Washer, Peeler, Fruit Pulper , Juice Extractor, Clarifier, Filter, Pasteurizer, Steam Jacketed Kettles, Packaging Machines, Protective Gloves, Head Caps, Lab Coat, Safety Goggles, Safety Boots, Mouth Masks, sanitizer	

Module 3: Food safety Practices

Mapped to FIC/N0211 v 1.0

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: *05:00*	**Duration:** *10:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Define hazards and risks • Recall 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 • Ensure timed 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	• Demonstrate the steps to be performed for implementing good manufacturing practices (GMP) • Demonstrate how to follow work instructions at levels of the 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 • Illustrate 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.

parameters in each and respective 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:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
GMP format and guidelines, allergen manual, personal hygiene guidelines, etc.	

Module 3: Basics of Entrepreneurial skills

Mapped to FIC/N2011 v 1.0

Terminal Outcomes:

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

Duration: *02:00*	
Theory – Key Learning Outcomes	
• 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 a 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 the internet for browsing, and accessing social media platforms, safely and securely	

• Discuss the need for identifying opportunities for potential business, sources for arranging money and potential legal and financial challenges • 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 NOS: "Introduction to Jam Processing & Packaging" mapped to NOS: "FIC/Q0211, v1.0". Minimum accepted score is 80%.	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q2601". 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***	
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 NOS: “Introduction to Jam Processing & Packaging” mapped to NOS: “FIC/Q0211, v1.0”. Minimum accepted score is 80%.	"Trainer", "MEP/Q2601, V1.0" with a scoring of minimum 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) will be assigned weightage. Therein, 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 the preparation of question bank/paper sets for each of the NOSs. Each of these papers sets / question banks 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 the final assessment:

i. Written Test: This will comprise of (i) True / False Statements (ii) Multiple Choice Questions, (iii) Matching Type Questions. An 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 a candidate's aptitude, attention to detail, quality consciousness etc. The end product will be measured against the pre-decided MCQ filled by the Assessor to gauge the level of their skill achievements.

iii. Structured Interview: This tool will be used to assess the conceptual understanding and the behavioral aspects as regards the job role and the specific task at hand.

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood 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 **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 helps 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
FIFO	First In First Out
FEFO	First Expire First Out
GMP	Good Manufacturing Practices
GHP	Good Hygiene Practices
CPR	Cardiopulmonary Resuscitation