Reference: GoodDot Plant based Kebab

Reference: Imagine Meats Plant Based Keema

Model Curriculum

QP Name: Food Technologist- Plant based proteins

QP Code: FIC/Q9303

QP Version: 1.0

NSQF Level: 5

Model Curriculum Version: 1.0

Food Industry Capacity and Skill Initiative (FICSI)
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Table of Contents

Training Parameters

Sector	Food Processing
Sub-Sector	Packaged Food
Occupation	Research and Development
Country	India
NSQF Level	5
Aligned to NCO/ISCO/ISIC Code	NCO-2015/NIL
Minimum Educational Qualification and Experience	1. Graduation in the relevant field Microbiology/Food technology/ Biotechnology or allied disciplines, or 2. 3 year diploma (after 12th Class) in the relevant field, or 3. Graduation in any field with 1 year relevant experience, or 4. 3 year diploma(after Class 12th class) in any field with 1 year of relevant experience, or 5. 2 year diploma (after 12th class) in relevant field with 1 year of relevant experience, or 6. 10th + ITI (after 10th Class) in the relevant field and 2 years of relevant experience, or 7. 3 Year diploma (After 10th) in the relevant field and 2 years of relevant experience, or 8. 1 Year diploma (after 12th class) in relevant field with 2 years of experience, or 9. 12th class pass with 4 years of relevant experience, or 10. Previous relevant qualification of NSQF Level 4 with 2 years of relevant experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	22 years
Last Reviewed On	20/05/2022
Next Review Date	30/06/2025
NSQC Approval Date	30/06/2022
QP Version	1.0
Model Curriculum Creation Date	10/05/2022
Model Curriculum Valid Up to Date	30/06/2025
Model Curriculum Version	1.0

Minimum Duration of the Course	510 Hours
Maximum Duration of the Course	510 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:

- Perform activities to select raw material and vendor for plant-based product development.
- Perform activities to develop plant-based product.
- Perform various activities to optimize the characteristics of food product.
- Perform various tasks to pack the plant-based product.
- Perform various tasks to prepare or cook the plant-based product.
- Apply necessary health and safety practices to ensure food safety and personal hygiene
- Work with various organisational departments effectively
- Use resources at the workplace optimally

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
	18:00	**12:00**	**00:00**	**00:00**	**30:00**
Module 1: Employability and Entrepreneurship Skills	18:00	12:00	00:00	00:00	30:00
FIC/N9305: Select raw materials and associated vendors NOS Version No.: 1.0 NSQF Level: 5	**20:00**	**40:00**	**00:00**	**00:00**	**60:00**
Module 2: Introduction to food processing sector and the job of a "Food Technologist-Plant based proteins"	08:00	00:00	00:00	00:00	08:00
Module 3: Plan for pilot trial	12:00	40:00	00:00	00:00	52:00
FIC/N9306: Carry out texturization of plant-based protein NOS Version No.: 1.0 NSQF Level: 5	**40:00**	**110:00**	**00:00**	**00:00**	**150:00**

Module 4: Carry out texturization of plant-based protein	10:00	40:00	00:00	00:00	50:00
Module 5: Carry out processing of whole muscle plant protein	15:00	35:00	00:00	00:00	50:00
Module 6: Carry out processing of restructured plant protein	15:00	35:00	00:00	00:00	50:00
FIC/N9307: Optimization of plant-based protein NOS Version No.: 1.0 NSQF Level: 5	**20:00**	**70:00**	**00:00**	**00:00**	**90:00**
Module 7: Carry out organoleptic testing	10:00	40:00	00:00	00:00	50:00
Module 8: Optimization of plant-based protein	10:00	30:00	00:00	00:00	40:00
FIC/N9308: Prepare and pack plant-based protein NOS Version No.: 1.0 NSQF Level: 5	**20:00**	**70:00**	**00:00**	**00:00**	**90:00**
Module 9: Pack and store plant-based protein	10:00	40:00	00:00	00:00	50:00
Module 10: Perform cooking of food and post-trial activities	10:00	30:00	00:00	00:00	40:00
FIC/N9904 – Ensure Food Safety at the Workplace NOS Version No. 1.0 NSQF Level 5	**10:00**	**20:00**	**00:00**	**00:00**	**30:00**
Module 11: Basic Food Safety Standards	10:00	20:00	00:00	00:00	30:00
FIC/N9903 – Ensure Workplace Health and Safety NOS Version No. 1.0 NSQF Level 5	**12:00**	**18:00**	**00:00**	**00:00**	**30:00**
Module 12: Follow Preventive Measures to avoid Accidents	04:00	06:00	00:00	00:00	10:00
Module 13: Manage Workplace Emergencies	04:00	08:00	00:00	00:00	12:00
Module 14: Manage Infection Control	04:00	04:00	00:00	00:00	08:00

FIC/N9902 – Work Effectively in an Organization **NOS Version No. 1.0** **NSQF Level 3**	**10:00**	**20:00**	**00:00**	**00:00**	**30:00**
Module 15: Working Effectively in an Organization	10:00	20:00	00:00	00:00	30:00
Total Duration	**150:00**	**360:00**	**00:00**	**00:00**	**510:00**

Module Details

Module 1: Employability and Entrepreneurship skills

Terminal Outcomes:

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

Duration: *18:00*	**Duration:** *12:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss own strengths and weaknesses and analyse the gaps to ensure continuous improvement. • Discuss the measures to be undertaken to utilise time effectively thereby achieving maximum productivity. • List the characteristics of innovative individuals • List the levels of Maslow Hierarchy of needs • List the traits of effective team • Discuss tips for stress management • Discuss the importance of good work ethics • Discuss how to manage an enterprise • Describe how to plan effective strategies for solving problems and improving work culture within the team. • List the various types of digital marketing techniques. • Discuss the types and importance of e-commerce in promoting businesses. • List the various types of online banking services being used widely. • Discuss the procedure to apply for bank finances • List the elements of a proposal to attract future business opportunities and prospective clients. • Explain how to conduct entrepreneurial programs to identify business opportunities, generate employment and increase clientele. • Understand the make in India campaign • Discuss the importance of Swachh Bharat Abhiyan • Understand the importance of entrepreneurship • Describe the traits of successful entrepreneur	• Show how to analyse a situation to identify gaps for improving the work process. • Demonstrate the procedure to plan the time taken to perform various tasks effectively. • Describe how market research is carried out • Role play the characteristics of an effective entrepreneur and leader • Demonstrate on how to identify new business opportunities • Prepare a sample plan to solve problems and improve productivity at the workplace. • Demonstrate the procedure to operate a computer for digital marketing, e-commerce, branding, etc. • Show how to use services such as NEFT, IMPS, UPI, RTGS for online banking.

• List the types of enterprises • Understand the importance of effective speaking and listening • Discuss the importance of problem solving • Discuss how to deal with failures • Describe the core keys of marketing • Discuss ways to manage risks at workplace	

Classroom Aids:
White board/Chart papers, marker.
Tools, Equipment and Other Requirements
NIL

Module 2: Introduction to food processing sector and the job of a 'Food Technologist - Plant based proteins'

Mapped to FIC/N9305, v1.0

Terminal Outcomes:

- State the importance of a Food Technologist- Plant based proteins in a food processing industry.
- Discuss the roles and responsibilities of a Food Technologist - Plant based proteins in a food processing industry

Duration: *08:00*	**Duration**: *00:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the roles and responsibilities of a Food Technologist - Plant based proteins in a food processing industry. • Discuss the future trends and career growth opportunities available to a Food Technologist - Plant based proteins. • Discuss the significance of a Food Technologist to ensure smooth operations in the food processing industry. • List the various terminologies used in carrying out technologist activities in food processing industry. • Discuss the organisational policies to be followed pertaining to the delivery standards, health, safety and hazard handling procedures, integrity, dress code, etc.	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Nil	

Module 3: Plan for pilot trial

Mapped to FIC/N9305, v1.0

Terminal Outcomes:

- List the pre-requisites for raw material selection.
- Perform various tasks to identify and select vendors to obtain different material.

Duration: *12:00*	**Duration**: *40:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe new product making planning process. • Elaborate resource management process. • Describe capacity utilization calculation process. • Describe procedure to allot work or responsibility to the team. • List different types of raw material and ingredients used to make final product. • Describe different types of proteins. • Describe various methods of protein extraction. • List basic equipment required for making plant-based protein. • List different type of flavorings and colorants to be used depending on the final product. • Describe organisational procedure of identifying and selecting vendors for sourcing product requirements. • Discuss food-related discipline such as food science, nutrition, microbiology, chemistry, or food business. • Describe food processing methods i.e. cooking, baking, roasting, drying, freezing, etc. • Discuss ways for analysis and interpretation of prototype model. • Recall the standard protocols related to safe handling and processing of food. • Discuss records of materials and documents such as equipment manuals, manufacturers' instructions, etc. needed to be maintained as per organisational procedure. • Discuss the information to be obtained from the consumer and market research data • Describe operating procedure and general maintenance of food production machineries.	• Show how to identify the combination of types of protein as per SOP. • Show how to select raw material, ingredients, flavorings, colorants and equipment to make food product. • Show how to estimate quantity of raw material and other materials. • Demonstrate organisational procedure of selecting vendors for sourcing product requirements. • Apply appropriate ways to check and verify the quality of materials received from the vendors. • Show how to obtain consumer and market research data for preparing different products. • Show the process of segregating and arranging allergenic and non-allergenic products and equipment • Apply appropriate food processing methods to conceptualize ideas and experiment from various combinations of old and new ingredients and recipes. • Demonstrate use of new or existing ingredients, recipes or production process to develop the prototype of food product in different formulations. • Show how to plan and prioritize tasks as per the obtained schedule. • Apply appropriate ways to organize and maintain availability of required quantity of raw materials, packaging materials, equipment etc. on shopfloor. • Show how to clean and maintain the work area, machines and tools as per the organization's specifications and standards.
Classroom Aids:	

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook
Tools, Equipment and Other Requirements
Safety gloves, Face mask, Safety shoes, Safety hat, Apron, Raw material (Legumes and pulses, grains, seeds, etc.), Ingredients (Proteins, binders, colorants, preservatives, fats, flavorings, etc.), vacuum system, twin screw extruder, liquid feeder, cooling die, cutting unit, etc.

Module 4: Carry out texturization of plant-based protein

Mapped to FIC/N9306, v1.0

Terminal Outcomes:

- List requirements for the texturization of plant-based protein.
- Perform various tasks involved in texturization of plant-based protein.

Duration: *10:00*	**Duration**: *40:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the steps to be performed for checking extruder proper functioning. • Describe the selection criteria of the type of protein required for texturization. • Describe various parameters: temperature, pressure, rpm, flow rate of raw materials etc. and their impact on the final product. • List material, machineries and equipment required for texturization process. • List the steps to be performed for setting processing and operating parameters in the control panel. • Discuss the need of adding fat as an ingredient to produce wet texturized vegetable protein (TVP) or texturized wheat protein (TWP). • Describe various defects in extruded product and their impact on the product. • Describe methods for checking the quality of extruded product. • List the steps to be performed for dry, pack and store the TVP/TWP for further processing. • Discuss the need of maintaining final moisture content of dry and wet TVP/TWP are less than 35% and more than 50%. • Discuss the organisational procedure of cleaning, storing and maintaining the equipment after completion of work.	• Show how to check that all the sections of the extruder are intact and operational. • Show how to assemble and attach blade and cutter motor to the head section of extruder as per SOP. • Show how to set processing and operating parameters in the control panel of twin screw extruder by following recipe chart. • Perform steps such as filling material in hopper, starting and operating extruder etc. to conduct texturization process and produce TVP/TWP of required shape and type as per SOP. • Read the dials and gauges to monitor the temperature, pressure, etc. of machine and ensure that it is working within the required specifications. • Show how to monitor the equipment throughout the process to detect any non-conformity. • Apply appropriate ways to check the quality of product after extrusion process and adjust the settings to as per the requirements (if required). • Show how to do sampling of extruded product and transfer it to quality lab for analysis. • Perform steps to dry, pack and store the TVP/TWP for further processing. • Show how to transfer the semi solid output from the extruder into the cooking station in case of wet TVP/TWP. • Show how to shut down all the equipment safely. • Demonstrate organistaional procedure of cleaning, storing and maintaining the equipment after completion of work. • Show how to dis-assemble the equipment assemblies after completion of work as per SOP.
Classroom Aids:	

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook
Tools, Equipment and Other Requirements
Safety gloves, Face mask, Safety shoes, Safety hat, Apron, Raw material (Legumes and pulses, grains, seeds, etc.), Ingredients (Proteins, binders, colorants, preservatives, fats, flavorings, etc.), vacuum system, twin screw extruder, liquid feeder, cooling die, cutting unit, etc.

Module 5: Carry out processing of whole muscle plant protein

Mapped to FIC/N9306, v1.0

Terminal Outcomes:

- List requirements for the processing of whole muscle plant protein.
- Perform various tasks involved in processing of whole muscle plant protein.

Duration: *15:00*	**Duration**: *35:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe processing of whole muscle plant protein. • Lis the material i.e. fats, flavors, functional additives, etc. required for preparing marinade. • List the steps to be performed for applying coat of marinade, adhesive component and exterior coating on the TVP/TWP. • Describe various adhesive components and exterior coating and their selection criteria. • Elaborate various thermal processes to cook the coated TVP/TWP. • Discuss the need of maintaining temperature and moisture of the product throughout the process. • Describe various extended shelf life processes (ESLP). • Describe various cooling techniques to cool the whole muscle plant protein. • Discuss ways to store the developed whole muscle plant protein for accelerated shelf life study.	• Show how to arrange the dry as well wet TVP/TWP from the store as per organisational procedure. • Apply appropriate ways to hydrate the procured dry TVP/TWP. • Perform steps to prepare marinade and apply its coat on the dry and wet TVP/TWP to incorporate additional flavour and texture. • Show how to apply a coat of an appropriate adhesive component and exterior coating the TVP/TWP as per the requirement. • Demonstrate various thermal processes to cook the coated TVP/TWP on the basis of finished product. • Apply appropriate ways to maintain the temperature and moisture of the product throughout the process. • Demonstrate various extended shelf life processes (ESLP) to prolong the shelf life of the whole muscle plant protein. • Apply appropriate cooling technique to cool the whole muscle plant protein based on the final delivery. • Show how to store the developed whole muscle plant protein for accelerated shelf life study in a designated area.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Safety gloves, Face mask, Safety shoes, Safety hat, Apron, Raw material (Legumes and pulses, grains, seeds, etc.), Ingredients (Proteins, binders, colorants, preservatives, fats, flavorings, etc.), vacuum system, twin screw extruder, liquid feeder, cooling die, cutting unit, etc.	

Module 6: Carry out processing of restructured plant protein

Mapped to FIC/N9306, v1.0

Terminal Outcomes:

- List requirements for the processing of restructured plant protein.
- Perform various tasks involved in processing of restructured plant protein.

Duration: *15:00*	**Duration**: *35:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe processing of restructured plant protein. • List various ingredients and exterior coating material required for dough formation. • Elaborate the importance of proper mixing of all the ingredients to form dough for different products. • Elaborate need of proper coating of fresh as well as cooked products with different material based on the final product. • Elaborate various thermal processes to cook the coated TVP/TWP. • Discuss the need of maintaining temperature and moisture of the product throughout the process. • Describe various extended shelf life processes (ESLP). • Describe various cooling techniques to cool the restructured plant protein. • Discuss ways to store the developed restructured plant protein for accelerated shelf life study.	• Show how to obtain dry and wet TVP/TWP for processing to make restructured plant protein. • Apply appropriate ways to blend the hydrated TVP/TWP with different ingredients within the specified ratio. • Show how to mix ingredients properly to form dough. • Show how to coat fresh as well as cooked products with different material i.e. seasonings, breading, sausage casing, etc. based on the final product • Demonstrate various thermal processes to cook the product or the dough formation. • Demonstrate various extended shelf life processes (ESLP) to prolong the shelf life of the restructured plant protein. • Apply appropriate cooling technique to cool the restructured plant protein based on the final delivery. • Show how to store the restructured plant protein for accelerated shelf life study in a designated area.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Safety gloves, Face mask, Safety shoes, Safety hat, Apron, Raw material (Legumes and pulses, grains, seeds, etc.), Ingredients (Proteins, binders, colorants, preservatives, fats, flavorings, etc.), vacuum system, twin screw extruder, liquid feeder, cooling die, cutting unit, etc.	

Module 7: Carry out organoleptic testing

Mapped to FIC/N9307, v1.0

Terminal Outcomes:

- List requirements for organoleptic testing.
- Perform various tasks involved in organoleptic testing.

Duration: *10:00*	**Duration**: *40:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe different parameters need to be evaluate in organoleptic testing of product. • List the steps to be performed for organoleptic testing of product. • List the material and testing apparatus required for testing process. • List the steps to be performed for conducting various sensory evaluation tests i.e. product oriented, consumer oriented on food product. • List the steps to be performed for conducting various descriptive tests i.e. measure of frequency, central tendency, dispersion, etc. • Elaborate categorization of test observations into different groups.	• Show how to assemble and set the material and testing apparatus for organoleptic testing as per SOP. • Show how to present the plant based protein product in its final cooked form to the panelists for sensory evaluation. • Perform steps to conduct various sensory evaluation tests on the food product as per the requirement. • Apply appropriate ways to measure and analyse the reaction of the panelists based on their sense of sight, smell, taste, touch, etc. • Show how to record the test observations and categorize them into different groups as per SOP. • Apply appropriate ways to make changes in formulation of food product on the basis of consumer feedback by following SOP.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Final product, Table, sensory evaluation sheet, texture analyzer, Safety gloves, Face mask, Safety shoes, Safety hat, Apron, Hot Air Oven, Ph meter, titration setup	

Module 8: Optimization of plant-based protein

Mapped to FIC/N9307, v1.0

Terminal Outcomes:

- Perform various tasks involved in optimization of various characteristics of plant based protein.
- Perform various tasks involved in conducting accelerated shelf life study of product.

Duration: *10:00*	**Duration**: *30:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe various characteristics of plant based protein need to be optimize and their impact on the food product. • Describe various texture parameters i.e. compression, puncture, cutting, extrusion, etc. of the final product and their impact on the food product. • List the steps to be performed for checking the different parameters of texture of the final product. • Describe methods i.e. Protein Digestibility Corrected Amino Acid Score, Digestibility, etc. for determining the protein quality of plant based protein. • List the steps to be performed for fortifying the plant based protein with different vitamins and minerals. • Describe methods of doing accelerated shelf life study. • List the steps to be performed for shelf life study of different plant based protein samples. • List the steps to be performed for conducting various chemical tests (pH, moisture, acidity, etc.), nutritional analysis test and amino acid profiling test on the product.	• Show how to identify target texture of plant based protein and make the changes as per requirement. • Demonstrate use of texture analyzer for checking the different parameters of texture of the final product. • Apply appropriate ways to optimize the color and/or flavor of the plant based protein product based on the consumer results. • Apply appropriate methods to determine the protein quality of plant based protein. • Perform steps to fortify the plant based protein with different vitamins and minerals as per SOP. • Perform preparatory steps such as work area cleaning, material arrangement etc. for conducting shelf life study of plant based protein. • Perform steps to conduct accelerated shelf life study of different plant based protein samples. • Perform steps to conduct various chemical tests (pH, moisture, acidity, etc.), nutritional analysis test and amino acid profiling test on the product. • Show how to fill test request form with the details of Amino acids. • Apply appropriate ways to store the tested samples and send them to the NABL certified lab for analysis by following SOP/WI.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Final product, Table, sensory evaluation sheet, texture analyzer, Safety gloves, Face mask, Safety shoes, Safety hat, Apron, Hot Air Oven, Ph meter, titration setup	

Module 9: Pack and store plant based protein

Mapped to FIC/N9308, v1.0

Terminal Outcomes:

- List the pre-requisites for preparing and packaging of plant based protein products.
- Perform various tasks to pack the plant based protein products.

Duration: *10:00*	**Duration**: *40:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List different plant based protein products and their characteristics. • Describe various parameters of the plant based protein product packaging material and their impact on the product. • Describe retort packaging. • List the steps to be performed for retort packaging of canned plant based protein products. • List the material and apparatus require for retort packaging. • Discuss the information need to be available on the packaging of plant based protein products as per the FSSAI standards of packaging and labelling.	• Show how to place canned plant based protein products in the can and place lid on filled cans. • Show how to load the product in retort machine and set the parameters of retort machine to sterilize the canned products • Show how to monitor the packaging process to ascertain suitable packaging. • Apply appropriate ways to store plant based protein products in appropriate environmental conditions.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Safety gloves, Face mask, Safety shoes, Safety hat, Apron, packaging material	

Module 10: Perform cooking of food and post-trial activities

Mapped to FIC/N9308, v1.0

Terminal Outcomes:

- List the pre-requisites for preparing and cooking plant based protein products.
- Perform various tasks to prepare and cook the plant based protein products.
- Perform post-cooking activities.

Duration: *10:00*	**Duration**: *30:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List tools and equipment required for cooking of different plant based protein products. • List the steps to be performed for cooking the different plant based protein products. • Discuss the need of bringing the plant based protein product at room temperature before serving. • Elaborate methods for inspecting the quality of finished products. • Discuss optimal storage conditions of texturized vegetable protein or texturized wheat protein. • Discuss ways to ensure the good quality of stocked material i.e. raw material, processed material, finished products, etc. • Discuss the organisational procedure of cleaning, storing and maintaining the work area, machineries, equipment and tools after completion of work. • Discuss ways to manage and control packaging wastage. • Describe the methods used for safe disposal of waste material from the food processing workplace.	• Perform steps to cook different plant based protein products as per the cooking instructions. • Apply appropriate ways to bring the plant based protein product at room temperature before serving. • Show how to serve the food product for customer tasting with specified theme, characteristics, provenance and processing techniques. • Show how to explain post-purchase storage recommendations for food product to customer. • Apply appropriate methods to inspect the quality of finished products before releasing the final recipe. • Role play a situation on identifying and communicating production team about optimal storage conditions of texturized vegetable protein or texturized wheat protein. • Dramatize a situation on coordinating with vendors for distribution and supply of TVP and TWP to individuals and organizations. • Demonstrate organistaional procedure of cleaning, storing and maintaining the work area, machineries, equipment and tools after completion of work. • Show how to dispose waste material safely as per organisational and environmental guidelines.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Safety gloves, Face mask, Safety shoes, Safety hat, Apron, packaging material	

Module 11: Basic Food Safety Standards

Mapped to FIC/N9904, v1.0

Terminal Outcomes:

- Explain the various food safety standards to be followed during the production process
- Prepare sample reports regarding food safety regulations, inspections, faults observation, etc.

Duration: *10:00*	**Duration**: *20:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the types of biological, chemical and physical hazards present in the food processing industry • Discuss various types of food contaminations, their causes, and ways to prevent them • Discuss the importance of following the standard procedures for ensuring food safety) • State the importance of ensuring that the materials (such as raw materials, processed materials, finished goods, etc.) are adequately isolated to prevent them from contamination • Outline the standard regulations to be followed for ensuring food safety as listed in 'The Food Safety and Standards Act, 2006 that need to be followed during production • Discuss the role of HACCP, VACCP and TACCP as well as procedures to implement these in the food industry • Discuss about product information and consumer awareness, product recall and withdrawal, and traceability • Explain the procedure to conduct workplace food safety audits • Discuss various types of allergens and their management at the workplace • Discuss the corrective measures to be applied to ensure food safety • List various issues that can arise during food production and other processes • Discuss the procedure of performing root cause analysis and taking corrective and preventive actions against workplace problems • State the significance of training the team members regarding various food safety procedures such as GMP, HACCP, etc.	• Apply appropriate practices to identify various biological, chemical, and physical hazards at various stages (procurement of raw material; production, manufacturing, distribution, delivery of finished product, etc.) of food processing • Employ appropriate practices to implement food safety procedures and regulatory policies at the workplace • Employ appropriate practices to establish and follow Good Manufacturing Practices (GMPs) related to ergonomics, cleaning and sanitation, equipment and containers, pest control, facilities, food storage, transportation, distribution etc. • Demonstrate the procedure followed for allergen management and handling and storage of raw materials • Apply appropriate practices to establish and follow monitoring systems, like Hazard Analysis Critical Control Point (HACCP) • Apply relevant practices to take appropriate action in instances such as VACCP (Vulnerability Assessment Critical Control Points) and TACCP (Threat Assessment Critical Control Points) • Apply appropriate practices to plan and execute an audit on food safety address the non-conformance with root cause analysis (RCA), and take corrective action preventive action (CAPA) • Role play a situation on how to address issues pertaining to food safety and quality reported by the team members • Prepare sample reports for food safety regulations followed, inspections done, faults observed, etc. • Dramatize a situation on how to organize training and workshops on food safety aspects such as Good Manufacturing

• List the information to be recorded in the work process	Practices (GMP), HACCP, VACCP, TACCP, etc.
Classroom Aids:	
Training kit (Trainer guide, Presentations), White board, Marker, Projector, Laptop, Presentation, Participant Handbook and Related Standard Operating Procedures	
Tools, Equipment and Other Requirements	
Sample pictures of various biological, chemical, and physical hazards, Sample pictures of Contaminants, samples of potential allergens, process flow chart and HACCP plan.	

Module 12: Follow Preventive Measures to avoid Accidents

Mapped to FIC/N9903, v1.0

Terminal Outcomes:

- Explain the standard procedure to be followed for dealing with workplace hazards safely
- Describe how to minimize potential risks and accidents at the workplace
- Demonstrate how to train the workforce on accident prevention techniques effectively

Duration: *04:00*	**Duration**: *06:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Define 'hazards' and 'risks' • Discuss the causes of various types of workplace hazards, risks and accidents, preventive measures to be taken as well as the procedures to deal with the same • State the importance of maintaining the equipment effectively • Discuss the standard practices to be followed to control and prevent risks, hazards, and accidents • Discuss the various types of safety signs and their relevance at the workplace • State the significance of displaying the common hazard signages wherever required • Outline the importance of ensuring the availability of general health and safety equipment at all times • Describe the causes of fire, ways to prevent them and rescue techniques to be followed at times of fire at the workplace • Outline the purpose and usage of various Personal Protective Equipment (PPE) required at the workplace	• Demonstrate how to use and dispose of relevant personal protective equipment as per tasks and work conditions • Show how to implement organisational safety protocols to prevent accidents and hazards at the workplace • Demonstrate how to use various types of fire extinguishers effectively Dramatize a situation on how to train the workforce on accident prevention techniques (such as role of appropriate PPE; use of fire extinguishers, dealing with hazards; identification of risks that could lead to accidents; safety protocols followed to avoid accidents; role of different types of hazard signs, safe lifting and carrying practices, etc. required at the workplace
Classroom Aids:	
Training kit (Trainer guide, Presentations), White board, Marker, Projector, Laptop, Presentation, Participant Handbook and Related Standard Operating Procedures	
Tools, Equipment and Other Requirements	
Personal Protection Equipment: Safety glasses, Head protection, Rubber gloves, Safety footwear, Warning signs and tapes, Fire extinguisher, First aid kit, Relevant Standard Operating Procedures and Sample reports	

Module 13: Manage Workplace Emergencies

Mapped to FIC/N9903, v1.0

Terminal Outcomes:

- Apply appropriate practices to deal with the emergencies at workplace effectively
- Describe the trainings to be provided for dealing with emergencies at the workplace

Duration: *04:00*	**Duration**: *08:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss workplace emergency and evacuation procedures and the importance of following them • Explain the procedure to be followed for administering immediate first aid to victims in case of cuts, bleeding, burns, choking, electric shock, poisoning, etc. • Discuss the procedure to be followed for providing artificial respiration and cardio-pulmonary resuscitation (CPR) to the affected person and highlight its significance • State the impact of health, safety and security breaches on self, team, and work process	• Demonstrate the procedure to be followed to free a person from electrocution safely • Show how to administer appropriate first aid procedure to victims in case of cuts, bleeding, burns, choking, electric shock, poisoning, etc. • Demonstrate the procedure e followed provide artificial respiration and cardio-pulmonary resuscitation (CPR) in various instances (e.g., cardiac arrest) • Roleplay a situation on how to report information such as identified breaches in health, safety and security policies and procedures to the concerned authority accurately • Dramatize a situation on how to train the workforce on emergency procedures (such as safe evacuation; treating a person from electrocution; immediate first aid to be given at times of cuts, bleeding, burns, choking, electric shock, poisoning, etc.; administering artificial respiration and cardio-pulmonary resuscitation (CPR); escalating issues beyond own scope, etc.) to be followed at the workplace
Classroom Aids:	
Training kit (Trainer guide, Presentations), White board, Marker, Projector, Laptop, Presentation, Participant Handbook and Related Standard Operating Procedures	
Tools, Equipment and Other Requirements	
Personal Protection Equipment: Safety glasses, Head protection, Rubber gloves, Safety footwear, Warning signs and tapes, Fire extinguisher, First aid kit, Relevant Standard Operating Procedures and Sample reports	

Module 14: Manage Infection Control

Mapped to FIC/N9903, v1.0

Terminal Outcomes:

- Describe the various steps to be followed for managing infections at the workplace
- Perform various tasks to train the workforce on infection control practices effectively

Duration: *04:00*	**Duration**: *04:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the general sources of infections • Discuss the procedures to be followed to tackle infection spread and the importance of carrying out the sanitization of the work area, equipment and related facilities as per standards • Explain various ways to store the sanitization materials appropriately • Discuss various types of potential infections along with the precautionary measures to be taken, and safety protocols to be followed at the workplace • Discuss appropriate actions to be taken during illness to self and others at the workplace • Describe the parameters to be assessed during health and safety audits, their acceptability levels of appropriateness and the procedure to conducting these audits • Discuss various parameters to be assessed and compliance issues to be addressed during the review of SOPs and the ways to improve them as per required quality and safety standards • State the importance of undergoing preventive health check-ups organized by the organisation in compliance with FSSAI guidelines • List various types of documents and records to be maintained in the work process	• Employ appropriate practices to follow and enforce Good Hygiene Practices (GHP) among the team members • Employ appropriate practices to store sanitisation materials effectively • Dramatize a situation to address team issues related to workplace health and safety Roleplay on how to train the workforce on infection control practices to be followed at the workplace
Classroom Aids:	
Training kit (Trainer guide, Presentations), White board, Marker, Projector, Laptop, Presentation, Participant Handbook and Related Standard Operating Procedures	
Tools, Equipment and Other Requirements	
Relevant Standard Operating Procedures and Sample reports	

Module 15: Working Effectively in an Organization

Mapped to FIC/N9902, v1.0

Terminal Outcomes:

- State the importance of proper communication and teamwork at the workplace
- Roleplay a situation to communicate with others effectively

Duration: *10:00*	**Duration**: *20:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the applicable organisational quality procedures and processes for working effectively in a team • Elucidate the legislations, standards, policies, and procedures followed in the organization relevant to employment, behaviour, harassment, discrimination, and performance conditions • State the importance of well-defined reporting structure in an organisation. • List the various types of inter-dependent functions applicable in the job • Discuss the different types of harassment and discrimination based on gender, disability, caste, religion, and culture • List the key factors that aid in prioritising tasks • Discuss the components of effective communication and its importance at the workplace • State the impact of poor communication on the employee, the employer, and the customer • State the importance of teamwork in organizational and individual success. • Discuss the importance of ethics and discipline for professional success • Explain the ways to address grievances appropriately and effectively • Discuss the importance of managing interpersonal conflicts effectively and ways to do so • List the different types of disabilities and the challenges faced by persons with disability (PwD) • Discuss the applicable laws, acts and provisions defined for PwD by the statutory bodies • State the importance of gender sensitivity and equality	• Roleplay a situation on how to obtain information, seek clarifications, reciprocate understanding and provide information accurately and clearly • Roleplay a situation on how to use inclusive language (verbal, non-verbal and written) that is gender, disability and culturally sensitive while interacting with others • Show how to consult and assist others to maximize effectiveness and efficiency at work • Dramatize a situation to show how to escalate problems and grievances beyond own scope to the concerned authority • Roleplay a situation on how to take appropriate action to resolve conflicts at the workplace • Roleplay a situation on how to report incidents of harassment and discrimination to appropriate authority

• Discuss the applicable legislations, grievance redressal mechanisms, and penalties against harassment at the workplace • State the importance of transacting with others without personal bias	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Nil	

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 or Home Science	3	Food processing	1	Food processing	
M.Sc/M.Tech/ME	Food technology or food engineering or Home Science	2	Food processing	1	Food processing	
Diploma /certificate course	(Food Technology / Food Engineering /packaging/Home science/Milling technology or allied sector)	4	Food processing	1	Food processing	

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Food Technologist - Plant based proteins" mapped to QP: "FIC/Q9303, 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". 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 or Home Science	2	Food processing	1	Food processing	
B.Sc or graduate/B.Tech/BE	Food technology/ Home Science	3	Food processing	2	Food processing	
Diploma /certificate course	(Food Technology / Food Engineering /packaging/Home science/Milling technology or allied sector)	4	Food processing	2	Food processing	

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Food Technologist - Plant based proteins" mapped to QP: "FIC/Q9303, v1.0". Minimum accepted score is 80%.	Recommended that the Assessor is certified for the Job Role: "Assessor", mapped to the Qualification Pack: "MEP/Q2701". Minimum accepted score as per MEPSC guidelines is 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. 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 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
   a. True / False Statements
   b. Multiple Choice Questions
   c. 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.

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 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
FIFO	First In First Out
FEFO	First Expire First Out
GMP	Good Manufacturing Practices
GHP	Good Hygiene Practices
CPR	Cardiopulmonary Resuscitation
ETP	Effluent Treatment Plant