Model Curriculum

QP Name: Food Fortification Associate

Elective: Fortified Rice Technician/ Fortified Oil Technician/ Fortified Salt Technician/ Fortified Milk Technician

QP Code: FIC/Q1012

QP Version: 1.0

NSQF Level: 4

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	Food Grain Milling
Occupation	Processing - Food Grain Milling
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8160.0700
Minimum Educational Qualification and Experience	1. 12th grade pass OR 2. Completed 2nd year of 3-year diploma (after 10th) OR 3. 10th Grade Pass with 2 years relevant experience in the Food Processing Industry OR 4. Previous relevant Qualification of NSQF Level 3.0 with 3 years relevant experience in the Food Processing Industry
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 years
Last Reviewed On	31/01/2024
Next Review Date	30/01/2027
NSQC Approval Date	31/01/2024
QP Version	1.0
Model Curriculum Creation Date	10/01/2024
Model Curriculum Valid Up to Date	30/01/2027
Model Curriculum Version	1.0
Minimum Duration of the Course	240 Hours 00 Minutes
Maximum Duration of the Course	840 Hours 00 Minutes

Program Overview

This section summarizes 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.

- Perform preparatory activities like workplace cleaning, tools and equipment check etc.
- Facilitate cleaning and regular maintenance of equipment at the workplace
- Perform and monitor various activities for wheat and flour fortification
- Perform post-production activities like packaging, quality check, cleaning etc.
- Apply necessary health and safety practices to ensure workplace health and safety

Elective 1: Fortified Rice Technician

- Perform and monitor various activities for rice fortification
- Perform post-production activities like packaging, quality check, cleaning etc.

Elective 2: Fortified Oil Technician

- Perform and monitor various activities for edible oil fortification
- Perform post-production activities like packaging, quality check, cleaning etc.

Elective 3: Fortified Salt Technician

- Perform and monitor various activities for salt fortification
- Perform post-production activities like packaging, quality check, cleaning etc.

Elective 4: Fortified Milk Technician

- Perform and monitor various activities for milk fortification
- Perform post-production activities like packaging, quality check, cleaning etc.

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/N9026 – Plan for Fortified Food Production NOS Version No. – 3.0 NSQF Level – 3	**15:00**	**15:00**	**--**	**--**	**30:00**
Module 1: Introduction to Food Processing Sector and the Job of 'Supervisor - Fortified Foods'	05:00	00:00	--	--	05:00
Module 2: Plan for production	10:00	15:00	--	--	25:00
FIC/N1042 – Carry out production of fortified flour NOS Version No. – 1.0 NSQF Level – 4	**50:00**	**100:00**	**-**	**-**	**150:00**
Module 3: Prepare for fortified flour production	15:00	30:00	-	-	45:00
Module 4: Milling of grains	20:00	40:00	-	-	60:00
Module 5: Production of fortified flour	15:00	30:00	-	-	45:00
FIC/N9906 – Apply Food Safety Guidelines in Food Processing NOS Version No. – 1.0 NSQF Level – 3	**10:00**	**20:00**	**-**	**-**	**30:00**
Module 6 Practice personal hygiene and follow Good Manufacturing Practices at workplace	5:00	10:00	-	-	15:00
Module 7: Apply food safety practices at workplace	5:00	10:00	-	-	15:00
DGT/VSQ/N0101 - Employability Skills (30 hours) NOS Version No. – 1.0 NSQF Level – 2	**12:00**	**18:00**	**-**	**-**	**30:00**
Module 8: Employability skills	12:00	18:00	-	-	30:00
Total Duration	**87:00**	**153:00**	-	**120**	**240:00**

Elective Modules

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

Elective 1: Fortified Rice Technician

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
FIC/N1043 – Carry out production of fortified rice NOS Version No. – 2.0 NSQF Level – 4	**50:00**	**100:00**	**-**	**-**	**150:00**
Module 19: Prepare for fortified rice production	15:00	30:00	-	-	45:00
Module 20: Production of fortified rice	35:00	70:00	-	-	105:00
Total Duration	**50:00**	**100:00**	**-**	-	**150:00**

Elective 2: Fortified Oil Technician

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
FIC/N1044 – Carry out production of fortified edible oil NOS Version No. – 1.0 NSQF Level – 4	**50:00**	**100:00**	**-**	**-**	**150:00**
Module 21: Prepare for fortified oil production	15:00	30:00	-	-	45:00
Module 22: Production of fortified edible oil	35:00	70:00	-	-	105:00
Total Duration	**50:00**	**100:00**	**-**	-	**150:00**

Elective 3: Fortified Salt Technician

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
FIC/N1045 – Carry out production of fortified salt NOS Version No. – 1.0 NSQF Level – 4	**50:00**	**100:00**	**-**	**-**	**150:00**
Module 23: Prepare for fortified salt production	15:00	30:00	-	-	45:00
Module 24: Production of fortified salt	35:00	70:00	-	-	105:00
Total Duration	**50:00**	**100:00**	**-**	-	**150:00**

Elective 4: Fortified Milk Technician

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
FIC/N2031 – Carry out production of fortified milk NOS Version No. – 1.0 NSQF Level – 4	**50:00**	**100:00**	**-**	**-**	**150:00**
Module 25: Prepare for fortified mil production	15:00	30:00	-	-	45:00
Module 26: Production of fortified milk	35:00	70:00	-	-	105:00
Total Duration	**50:00**	**100:00**	**-**	**-**	**150:00**

Module Details

Module 1: Introduction to Food Processing Sector and the Job of 'Supervisor - Fortified Foods'

Mapped to FIC/N9026, v2.0

Terminal Outcomes:

- Describe the food processing industry and its sub-sectors in brief
- Discuss the roles and responsibilities of a Supervisor - Fortified Foods

Duration: *05:00*	**Duration**: *00:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss about the food processing industry and food grain milling sub-sector in brief • Discuss the career opportunities available to a Supervisor - Fortified Foods in the food processing industry • Explain the terminologies used in fortification • List the sequence of operations to be performed in the job	
Classroom Aids:	
Whiteboard, Marker, Duster, Projector, Laptop, PowerPoint Presentation	
Tools, Equipment and Other Requirements	

Module 2: Prepare for Production

Mapped to FIC/N9026, v2.0

Terminal Outcomes:

- Discuss the preparation tasks to be performed for fortification
- State the importance of maintaining tools and equipment effectively

Duration: *10:00*	**Duration**: *15:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Elucidate production planning process • List the manpower and material requirements as per work requirement. • Discuss the importance of various process charts, product flow charts, resource management process, etc. • List the priority of tasks as per work schedule. • Recall the steps to plan capacity utilization of machinery with respect to the processing time, production order and batch size for each product. • Recall various steps required to organize production materials appropriately.	• Demonstrate the procedure for obtaining work requirements from supervisors. • Prepare samples to plan and prioritize work schedules • Demonstrate how to estimate the resources as per the requirement (raw materials, packaging materials, machineries, and manpower) • Employ appropriate practices to plan capacity utilization of machineries • Demonstrate how to organize production materials appropriately. • Demonstrate how to allot responsibilities to the helpers.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Raw materials, racks, utensils, Fire extinguishers, High speed exhausts, Masks – Head cover, mouth cover, cleaning ingredients and tools, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual	

Module 3: Prepare for fortified flour production

Mapped to FIC/N1042, v1.0

Terminal Outcomes:

- Identify tools and equipment required for fortified flour production
- List the raw materials required to produce fortified flour
- Demonstrate the tasks to identify the quality raw materials and equipment required to identify impurities in raw materials
- Explain the techniques used to store, discard and arrange the raw materials before production

Duration: *15:00*	**Duration**: *30:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the tools, equipment and production materials required. • Describe the characteristics of various raw material which are used to produce fortified flour (such as wheat grain, food grade vitamin and mineral premix etc.) • List the equipment, tools, machinery and methods used in pre-screening of raw materials • Discuss the flow charts for pre-screening of raw materials includes selection, inspection, screening, arrange, organize, & discard • State the importance of using vitamin and mineral premix • Describe the method of inspecting damaged raw material	• Carry out cleaning and maintaining the work area following organizational procedures. • Perform cleaning of machines and tools and sanitize them following the organization's specifications and standards. • Demonstrate how to dispose of the waste material at the designated place, safely. • Inspect the tools, equipment and machinery to ascertain suitability for use. • Report information such as faulty tools and equipment to the concerned authority. • Show how to identify various raw materials such as wheat grain, food grade vitamin and mineral premix and other ingredients • Employ appropriate practices to verify obtained ingredients meets the organisational standards as well as the standards laid down by FSSAI

	• Show how to arrange and segregate the raw material based on inspection
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Raw materials, racks, utensils, De-stoner, Separator, De-Husker, Splitter, Whitener, Polisher, Blender, Pulverizer, Stone mill / Roller Mill, sifter, Fire extinguishers, High speed exhausts, Masks – Head cover, mouth cover, cleaning ingredients, Fire extinguishers, High speed exhausts, Masks – Head cover, mouth cover, cleaning ingredients and tools, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual	

Module 4: Milling of grains
Mapped to FIC/N1042, v1.0

Terminal Outcomes:

- Discuss the pre-processing and processing of grains for milling
- Demonstrate the procedure for processing of grains

Duration: *20:00*	**Duration**: *40:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the significance of cleaned and infestation free equipment • Elucidate automatic measuring scales with the standard weight and measures • Explain different set of controls for automatic measuring scales in continuous process to transfer measured quantity of food grains for milling • Discuss the relevance of controlling speed of screw or chain conveyor and motor to maintain flow rate of the material • Elaborate proper lubrication of machine parts with food grade lubricants • State how to maintain flow rate of material by gear of rpm motor attached with chain conveyor • Elucidate cleaning and inspection for effective grading and sieving of grains based on size and grade • Detail requirement of sensors to maintain the flow rate • Recall setting the controls of blowers or suction fan to remove light impurities and dust particles from screens and sieves • Explain the use of separator, aspirator, etc. to remove light weight impurities from grains • State the functioning of de-stoner	• Exemplify the understanding of controls for automatic measuring scales • Demonstrate lubrication of machine parts with food grade lubricants • Show how to maintain flow rate of material by gear of rpm motor attached with chain conveyor • Elucidate maintenance of process machines in case of breakdown/ non confirmatory or emergency with proper approval • Guide on how to check the working condition of sensors • Display what to check to ensure no leakage is there in blower or suction fan • Exhibit how to inspect fumigated raw material for absence of any live infestation in it • Show how to transfer the grains to the destoner machine to remove stones and prepare the grains for washing • Display how to set controls for water bath • Show how to adjust temperature, pressure, and speed of dryer • Display the adjustment of roller speed, clearance, emery size, etc. of husker • Guide how to adjust the speed of the sifter and use of proper sieve size

machine to remove stones and prepare the grains for washing • Discuss the importance of soaking, conditioning, and tempering of grains through water bath • Elaborate the use of dryer to maintain required moisture in grains • Discuss the parameters of husker to remove husk from the grain by adjusting the rollers (of rubber roll huskers) and setting the clearance between the rollers • Emphasize on cooling the grain and to blow off the bran • Share why to control the rotation of the cylinders • Elucidate the use of sifter to remove the broken grains and transfer them to the grinder for milling • State the use of band sealer, temperature indicator of FFS machine • Discuss the relevance of cleanliness by winnowing machine • Illustrate grading of grains as per the desired size	• Show how to use band sealer, temperature indicator of FFS machine • Display the functioning of winnowing machine to remove chaff, soil, dirt, etc. • Elucidate how to transfer the grains into a decorticator/dehusker to remove the hull from the grain • Demonstrate how to transfer grain into the destoner respectively to remove stones from the grain • Exemplify storage of desired grain for further processing •
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Raw materials, racks, utensils, De-stoner, Separator, De-Husker, Splitter, Whitener, Polisher, Blender, Pulverizer, Stone mill / Roller Mill, sifter, Fire extinguishers, High speed exhausts, Masks – Head cover, mouth cover, cleaning ingredients and tools, Packaging equipment, packaging material, shelf-life study chamber, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual	

Module 5: Production of fortified flour

Mapped to FIC/N1042, v1.0

Terminal Outcomes:

- Discuss the steps involved in fortification of flour
- Demonstrate the steps for fortified flour production
- Demonstrate post-production activities

Duration: *15:00*	**Duration**: *30:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the parameters to be monitored during wheat flour mixing • List the basic quality tests performed on fortified milk to check its quality • List the equipment used in milk fortification process • List the types of mixer and blender used in fortification process • Discuss the need of anti-oxidant in production of fortified oil • Discuss FSSAI Guidelines for fortified milk • Discuss various losses during production and how to overcome them • Discuss how to monitor the stability of Fortified milk • State the importance of reporting instances related to production such to the concerned authority • Discuss the procedure to properly pack, label and store fortified milk • Discuss the importance of documenting production activities • Discuss how to safely dispose of waste and unwanted material • State the importance of storing equipment and tools in designated areas	• Show how to transfer some milled wheat flour into a mixer/blender by using conveyors • Display setting parameters and use of rotating screw type volumetric feeder for transferring the required quantity for premix into mixer/blender • Demonstrate the process of mixing wheat flour with vitamin premix in blender/mixer to prepare preblend • Show how to pack the wheat flour preblend and store it • Illustrate the process of mixing wheat flour and preblend in blender/mixer for fortified flour production • Administer dosing rate of premix to wheat flour • Show how to identify different losses during the production of fortified flour • Demonstrate how to monitor process loss during the cooking process • Demonstrate the process of testing suitable packaging material • Show how to arrange a proper storage area for Fortified flour • Show how to pack fortified flour in suitable packaging material • Show how to properly label package

	according to FSSAI guidelines • Demonstrate how to clean, maintain and store equipment after production • Roleplay a situation to perform shelf-life study of fortified flour • Show how to report to higher authorities about non-conformity in the process • Demonstrate how to fill documents used in the production facility • Show how to dispose of waste and unwanted material according to FSSAI guidelines
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Raw materials, racks, utensils, mixer, blender, screw type volumetric feeder, Fire extinguishers, High speed exhausts, Masks – Head cover, mouth cover, cleaning ingredients and tools, Packaging equipment, packaging material, shelf-life study chamber, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual	

Module 6: Practice personal hygiene and follow Good Manufacturing Practices at workplace

Mapped to FIC/N9906 v 1.7

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	• 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 • 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

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 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	Records, machine records, product parameters, process control parameters etc.
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 7: Apply food safety practices at the 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: *05:00*	**Duration:** *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	• Apply appropriate techniques to deal with hazards safely and appropriately • Perform 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. • Perform the steps to be followed during emergency and evacuation procedure.

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 and GMP issue to supervisor, if any	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
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 8: Employability skills

Mapped to DGT/VSQ/N0101, v 1.0

Terminal Outcomes:

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

Duration: *12:00*	**Duration:** *18:00*
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	• 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.

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 • 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:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Nil	

Module 9: Prepare for fortified rice production

Mapped to FIC/N1043, v1.0

Terminal Outcomes:

- Identify tools and equipment required for fortified rice production
- List the raw materials required to produce fortified rice
- Demonstrate the tasks to identify the quality raw materials and equipment required to identify impurities in raw materials
- Explain the techniques used to store, discard and arrange the raw materials before production

Duration: *15:00*	**Duration**: *30:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the tools, equipment and production materials required. • Describe the characteristics of various raw material which are used to produce fortified rice (such as broken rice, vitamin premix, minerals etc) • List the equipment, tools, machinery and methods used in pre-screening of raw materials • Discuss the flow charts for pre-screening of raw materials includes selection, inspection, screening, arrange, organize, & discard • State the importance of using vitamin and mineral premix • Describe the method of inspecting damaged raw material	• Carry out cleaning and maintaining the work area following organizational procedures. • Perform cleaning of machines and tools and sanitize them following the organization's specifications and standards. • Demonstrate how to dispose of the waste material at the designated place, safely. • Inspect the tools, equipment and machinery to ascertain suitability for use. • Report information such as faulty tools and equipment to the concerned authority. • Show how to identify various raw materials such as broken rice, vitamin premixes, minerals and other ingredients • Demonstrate the process to check the presence of foreign material with the use of magnetic separators • Employ appropriate practices to verify obtained ingredients meets the organisational standards as well as the standards laid down by FSSAI • Show how to arrange and segregate the raw material based on inspection
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Raw materials, racks, utensils, pulverizer, blender, extruder, Dryer, Fire extinguishers, High speed exhausts, Masks – Head cover, mouth cover, cleaning ingredients and tools, Magnetic separator, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual	

Module 10: Production of fortified rice

Mapped to FIC/N1043, v1.0

Terminal Outcomes:

- Discuss the steps involved in fortification of rice
- Demonstrate the steps for fortified rice production
- Demonstrate post-production activities

Duration: *35:00*	**Duration**: *70:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• State the importance of maintaining temperature and moisture level in the conditioning stage • List the motors present in the extruder • List the parameters to be monitored during extrusion • State the importance of passing the fortified rice kernels through a bar magnet • List the basic quality tests performed on fortified rice to check its quality • List the equipment used in rice fortification process • Discuss the process of hot and cold extrusion techniques • State the importance of preconditioning method • Describe the other methods of fortification like dusting and coating • List the types of dryer used in fortification process • Discuss FSSAI Guidelines for Fortified rice • Discuss various losses during production and how to overcome them • Discuss how to monitor the stability of Fortified rice • State the importance of reporting instances related to production such to the concerned authority • Discuss the procedure to properly pack, label and store fortified rice • Discuss the importance of documenting production activities • Discuss how to safely dispose of waste and unwanted material • State the importance of storing equipment and tools in designated areas	• Show the process of grinding and sieving of normal rice • Demonstrate the process of mixing vitamin and mineral premix into the ground rice flour • Exhibit how to incorporate water into the mixture • Demonstrate the process to perform extrusion • Show how to cool and dry the extruded fortified rice kernels • Roleplay a situation to transfer fortified rice kernels to quality lab for analysis • Demonstrate the procedure to add the raw materials into the hopper • Administer dosing rate of fortified rice kernel to normal rice • Illustrate the process of blending the mixture to product fortified rice • Show how to identify different losses during the production of fortified rice • Demonstrate how to monitor water loss during the cooking process • Demonstrate the process of butt drop and flat drop test on suitable packaging material • Show how to arrange a proper storage area for Fortified rice • Show how to pack fortified rice in suitable packaging material • Show how to properly label package according to FSSAI guidelines • Demonstrate how to clean, maintain and store equipment after production • Roleplay a situation to perform shelf-life study of fortified rice • Show how to report to higher authorities about non-conformity in the process • Demonstrate how to fill documents used in the production facility • Show how to dispose of waste and

	unwanted material according to FSSAI guidelines
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Raw materials, racks, utensils, pulverizer, blender, extruder, Dryer, Fire extinguishers, High speed exhausts, Masks – Head cover, mouth cover, cleaning ingredients and tools, Magnetic separator, Packaging equipment, packaging material, shelf-life study chamber, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual	

Module 11: Prepare for fortified oil production

Mapped to FIC/N1044, v1.0

Terminal Outcomes:

- Identify tools and equipment required for fortified oil production
- List the raw materials required to produce fortified oil
- Demonstrate the tasks to identify the quality raw materials and equipment required to identify impurities in raw materials
- Explain the techniques used to store, discard and arrange the raw materials before production

Duration: *15:00*	**Duration**: *30:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the tools, equipment and production materials required. • Describe the characteristics of various raw material which are used to produce fortified oil (such as edible oil, vitamin premix, water, aliquot oil etc.) • List the equipment, tools, machinery and methods used in pre-screening of raw materials • Discuss the flow charts for pre-screening of raw materials includes selection, inspection, screening, arrange, organize, & discard • State the importance of using vitamin and mineral premix • Describe the method of inspecting damaged raw material	• Carry out cleaning and maintaining the work area following organizational procedures. • Perform cleaning of machines and tools and sanitize them following the organization's specifications and standards. • Demonstrate how to dispose of the waste material at the designated place, safely. • Inspect the tools, equipment and machinery to ascertain suitability for use. • Report information such as faulty tools and equipment to the concerned authority. • Show how to identify various raw materials such as edible oil, vitamin premix, water, aliquot oil and other ingredients • Employ appropriate practices to verify obtained ingredients meets the organisational standards as well as the standards laid down by FSSAI • Show how to arrange and segregate the raw material based on inspection
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Raw materials, racks, utensils, blender, mixer, heater, stainless-steel bucket, Fire extinguishers, High speed exhausts, Masks – Head cover, mouth cover, cleaning ingredients and tools, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual	

Module 12: Production of fortified oil

Mapped to FIC/N1044, v1.0

Terminal Outcomes:

- Discuss the steps involved in fortification of oil
- Demonstrate the steps for fortified oil production
- Demonstrate post-production activities

Duration: *35:00*	**Duration**: *70:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• State the importance of maintaining temperature of water bath during heating process • List the parameters to be monitored during oil mixing • List the basic quality tests performed on fortified oil to check its quality • List the equipment used in oil fortification process • List the types of mixer and blender used in fortification process • Discuss the need of anti-oxidant in production of fortified oil • Discuss FSSAI Guidelines for fortified oil • Discuss various losses during production and how to overcome them • Discuss how to monitor the stability of Fortified oil • State the importance of reporting instances related to production such to the concerned authority • Discuss the procedure to properly pack, label and store fortified oil • Discuss the importance of documenting production activities • Discuss how to safely dispose of waste and unwanted material • State the importance of storing equipment and tools in designated areas	• Show the process of heating the vitamin premix in a water bath • Demonstrate the process of mixing vitamin premix with edible oil • Exhibit how to incorporate aliquot oil into the mixture • Demonstrate the procedure to add the preblend to oil tanks having agitators or circulation system • Administer dosing rate of preblend to edible oil • Illustrate the process of mixing the preblend and oil mixture in tanks • Show how to identify different losses during the production of fortified oil • Demonstrate how to monitor process loss during the cooking process • Demonstrate the process of testing suitable packaging material • Show how to arrange a proper storage area for Fortified oil • Show how to pack fortified oil in suitable packaging material • Show how to properly label package according to FSSAI guidelines • Demonstrate how to clean, maintain and store equipment after production • Roleplay a situation to perform shelf-life study of fortified oil • Show how to report to higher authorities about non-conformity in the process • Demonstrate how to fill documents used in the production facility • Show how to dispose of waste and unwanted material according to FSSAI guidelines
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Raw materials, racks, utensils, blender, mixer, heater, stainless-steel bucket, Fire extinguishers,	

High speed exhausts, Masks – Head cover, mouth cover, cleaning ingredients and tools, Packaging equipment, packaging material, shelf-life study chamber, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual

Module 13: Prepare for fortified salt production

Mapped to FIC/N1045, v1.0

Terminal Outcomes:

- Identify tools and equipment required for fortified salt production
- List the raw materials required to produce fortified salt
- Demonstrate the tasks to identify the quality raw materials and equipment required to identify impurities in raw materials
- Explain the techniques used to store, discard and arrange the raw materials before production

Duration: *15:00*	**Duration**: *30:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the tools, equipment and production materials required. • Describe the characteristics of various raw material which are used to produce fortified salt (such as raw salt, iron and iodine premix, stabilizer i.e. sodium hexametaphosphate (SHMP), soya stearin etc.) • List the equipment, tools, machinery and methods used in pre-screening of raw materials • Discuss the flow charts for pre-screening of raw materials includes selection, inspection, screening, arrange, organize, & discard • State the importance of using iron and iodine premix • Describe the method of inspecting damaged raw material	• Carry out cleaning and maintaining the work area following organizational procedures. • Perform cleaning of machines and tools and sanitize them following the organization's specifications and standards. • Demonstrate how to dispose of the waste material at the designated place, safely. • Inspect the tools, equipment and machinery to ascertain suitability for use. • Report information such as faulty tools and equipment to the concerned authority. • Show how to identify various raw materials such as raw salt, iron and iodine premix, sodium hexametaphosphate (SHMP), soya stearin and other ingredients • Employ appropriate practices to verify obtained ingredients meets the organisational standards as well as the standards laid down by FSSAI • Show how to arrange and segregate the raw material based on inspection
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Raw materials, racks, utensils, conveyor system, blender, continuous mixer, dryer, Fire extinguishers, High speed exhausts, Masks – Head cover, mouth cover, cleaning ingredients, Fire extinguishers, High speed exhausts, Masks – Head cover, mouth cover, cleaning ingredients and tools, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual	

Module 14: Production of fortified salt

Mapped to FIC/N1045, v1.0

Terminal Outcomes:

- Discuss the steps involved in fortification of salt
- Demonstrate the steps for fortified salt production
- Demonstrate post-production activities

Duration: *35:00*	**Duration**: *70:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the parameters to be monitored during raw salt and premix mixing • List the basic quality tests performed on fortified salt to check its quality • List the equipment used in salt fortification process • List the types of mixer and blender used in fortification process • Discuss the need of stabilizer in production of fortified salt • Discuss FSSAI Guidelines for fortified salt • Discuss various losses during production and how to overcome them • Discuss how to monitor the stability of Fortified salt • State the importance of reporting instances related to production such to the concerned authority • Discuss the procedure to properly pack, label and store fortified salt • Discuss the importance of documenting production activities • Discuss how to safely dispose of waste and unwanted material • State the importance of storing equipment and tools in designated areas	• Show the process of cleaning and washing the foreign particle, impurities etc. from raw salt • Demonstrate the process of grinding and sieving the raw salt in small sizes • Demonstrate the process of mixing the grinded salt, iron and iodine premix, sodium hexametaphosphate (SHMP) and soya stearin in the blender • Demonstrate the procedure to add the preblend and raw salt in the continuous mixers • Administer dosing rate of preblend to raw salt • Illustrate the process of mixing the preblend and raw salt in mixers • Demonstrate the process of drying fortified salt in dryers • Show how to identify different losses during the production of fortified salt • Demonstrate how to monitor process loss during the cooking process • Demonstrate the process of testing suitable packaging material • Show how to arrange a proper storage area for Fortified salt • Show how to pack fortified salt in suitable packaging material • Show how to properly label package according to FSSAI guidelines • Demonstrate how to clean, maintain and store equipment after production • Roleplay a situation to perform shelf-life study of fortified salt • Show how to report to higher authorities about non-conformity in the process • Demonstrate how to fill documents used in the production facility • Show how to dispose of waste and unwanted material according to FSSAI guidelines

Classroom Aids:
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.
Tools, Equipment and Other Requirements
Raw materials, racks, utensils, conveyor system, blender, continuous mixer, dryer, Fire extinguishers, High speed exhausts, Masks – Head cover, mouth cover, cleaning ingredients and tools, Packaging equipment, packaging material, shelf-life study chamber, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual

Module 15: Prepare for fortified milk production

Mapped to FIC/N2031, v1.0

Terminal Outcomes:

- Identify tools and equipment required for fortified milk production
- List the raw materials required to produce fortified milk
- Demonstrate the tasks to identify the quality raw materials and equipment required to identify impurities in raw materials
- Explain the techniques used to store, discard and arrange the raw materials before production

Duration: *15:00*	**Duration**: *30:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the tools, equipment and production materials required. • Describe the characteristics of various raw material which are used to produce fortified milk (such as milk, vitamin premix etc.) • List the equipment, tools, machinery and methods used in pre-screening of raw materials • Discuss the flow charts for pre-screening of raw materials includes selection, inspection, screening, arrange, organize, & discard • State the importance of using Vitamin A and D premix • Describe the method of inspecting damaged raw material	• Carry out cleaning and maintaining the work area following organizational procedures. • Perform cleaning of machines and tools and sanitize them following the organization's specifications and standards. • Demonstrate how to dispose of the waste material at the designated place, safely. • Inspect the tools, equipment and machinery to ascertain suitability for use. • Report information such as faulty tools and equipment to the concerned authority. • Show how to identify various raw materials such as milk, vitamin premix and other ingredients • Apply appropriate ways to check and conform the quality of milk through chemical parameters and verify the quality report • Employ appropriate practices to verify obtained ingredients meets the organisational standards as well as the standards laid down by FSSAI • Show how to arrange and segregate the raw material based on inspection
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Raw materials, racks, utensils, blender/mixer, pH Meter, Weighing Balance, Beaker, Bunsen Burner, Filter, Homogenizer, Pasteurizer, Separator, Fire extinguishers, High speed exhausts, Masks – Head cover, mouth cover, cleaning ingredients, Fire extinguishers, High speed exhausts, Masks – Head cover, mouth cover, cleaning ingredients and tools, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual	

Module 16: Production of fortified milk

Mapped to FIC/N2031, v1.0

Terminal Outcomes:

- Discuss the steps involved in fortification of milk
- Demonstrate the steps for fortified milk production
- Demonstrate post-production activities

Duration: *35:00*	**Duration**: *70:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the parameters to be monitored during milk mixing • List the basic quality tests performed on fortified milk to check its quality • List the equipment used in milk fortification process • List the types of mixer and blender used in fortification process • Discuss the need of anti-oxidant in production of fortified oil • Discuss FSSAI Guidelines for fortified milk • Discuss various losses during production and how to overcome them • Discuss how to monitor the stability of Fortified milk • State the importance of reporting instances related to production such to the concerned authority • Discuss the procedure to properly pack, label and store fortified milk • Discuss the importance of documenting production activities • Discuss how to safely dispose of waste and unwanted material • State the importance of storing equipment and tools in designated areas	• Show the process of heating the vitamin premix in a water bath • Demonstrate the process of mixing aliquot of chilled milk with vitamin premix • Display use of homogenizer for getting desire fat content and to produce milk preblend • Demonstrate the procedure to add the milk preblend to milk tanks • Administer dosing rate of preblend to milk • Illustrate the process of mixing and stirring the milk preblend and milk mixture in tanks • Show how to set and control metering devices to allow measured volume of milk for processing • Show how to use the filter to remove sediments from milk • Demonstrate setting and use of separator for separation of cream from milk • Display setting and use of homogenizer for getting desire fat content • Demonstrate setting and use of pasteurizer • Demonstrate chilling of milk in the chilling tank • Show how to identify different losses during the production of fortified milk • Demonstrate how to monitor process loss during the cooking process • Demonstrate the process of testing suitable packaging material • Show how to arrange a proper storage area for Fortified milk • Show how to pack fortified milk in suitable packaging material • Show how to properly label package according to FSSAI guidelines • Demonstrate how to clean, maintain and store equipment after production • Roleplay a situation to perform shelf-life

	study of fortified milk • Show how to report to higher authorities about non-conformity in the process • Demonstrate how to fill documents used in the production facility • Show how to dispose of waste and unwanted material according to FSSAI guidelines
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Raw materials, racks, utensils, blender/mixer, pH Meter, Weighing Balance, Beaker, Bunsen Burner, Filter, Homogenizer, Pasteurizer, Separator, Fire extinguishers, High speed exhausts, Masks – Head cover, mouth cover, cleaning ingredients and tools, Packaging equipment, packaging material, shelf-life study chamber, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual	

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 Food Science or Dairy Science	3	Food processing	1	Food processing	
M.Sc/M.Tech/ME	Food technology or food engineering or Food Science or Dairy Science	2	Food processing	1	Food processing	

Trainer Certification	
Domain Certification	**Platform Certification**
Job Role "Fortified Foods Supervisor" mapped to the FIC/Q1012, v1.0 with minimum accepted score of 80%.	Recommended that the Trainer is certified for the Job Role: "Trainer" (VET & SKILLS), mapped to the Qualification Pack: "MEP/Q2601", V.2. Minimum accepted SCORE IS 80 % as per SSC 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	

Assessor Certification	
Domain Certification	**Platform Certification**
Job Role "Fortified Foods Supervisor " mapped to the FIC/Q1012, v1.0 with a minimum accepted score of 80%.	Recommended that the Assessor is certified for the Job Role: "Assessor" (VET & SKILLS), mapped to the Qualification Pack: "MEP/Q2701", V-2. The minimum accepted SCORE IS 80 % as per SSC guidelines.

Assessment Strategy

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
(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. Assessment will be based on the concept of Independent Assessors empanelled with Assessment

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 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
SOP	Standard Operating Procedure
AQL	Acceptable Quality Level
ITI	Industrial Training Institute
B. Tech	Bachelor of Technology
B. Sc.	Bachelor of Science
OJT	On the Job Training
PPE	Personal Protective Equipment