Model Curriculum

QP Name: Fish and Sea Food Processing Technician

QP Code: FIC/Q4001

QP Version: 3.0

NSQF Level: 3

Model Curriculum Version: 3.0

Table of Contents

Training Parameters

Sector	Food Processing
Sub-Sector	Fish and Sea Food
Occupation	Processing-Soya Foods
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	NCO-2004/7411.90
Minimum Educational Qualification and Experience	1. Grade 8 pass and pursuing continuous schooling in regular school with vocational subject OR 2. 8th grade pass with 1-year of relevant experience OR 3. 5th grade pass with 4 years of relevant experience OR 4. Ability to read and write with 5 years relevant experience OR 5. Previous relevant qualification of NSQF Level 2 with 1 years of relevant experience OR 6. Previous relevant qualification of NSQF Level 2.5 with 6 months of relevant experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 years
Last Reviewed On	29-07-2021
Next Review Date	28-07-2024
NSQC Approval Date	29-07-2021
QP Version	3.0
Model Curriculum Creation Date	20-05-2021
Model Curriculum Valid Up to Date	28-07-2024
Model Curriculum Version	3.0
Minimum Duration of the Course	270 Hours
Maximum Duration of the Course	270 Hours

Program Overview

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

Training Outcomes

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

- Process all types of fish and seafood manually or mechanically to achieve the desired quality as set by the organization
- Operate the machineries/equipment for processing fish and seafood
- Plan, organize, and prioritize production as per schedule
- Follow and maintain food safety and hygiene in the work environment

Compulsory Modules

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

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
FIC/N4001 Prepare and maintain work area and machineries for processing fish and seafood NOS Version No.: 1.0 NSQF Level: 4	**40:00 Hours**	**50:00 Hours**	**00:00 Hours**	**00:00 Hours**	**90:00 Hours**
Module 1: Introduction to the training program and overview of food processing industry	04:00 Hours	00:00 Hours	00:00 Hours	00:00 Hours	04:00 Hours
Module 2: Professional Skills	04:00 Hours	06:00 Hours	00:00 Hours	00:00 Hours	10:00 Hours
Module 3: Prepare work area and equipment for fish and sea food processing	32:00 Hours	44:00 Hours	00:00 Hours	00:00 Hours	76:00 Hours

FIC/N4002 **Prepare for execution of** **fish and sea food** **processing** **NOS Version No.: 1.0** **NSQF Level: 4**	**10:00** **Hours**	**20:00** **Hours**	**00:00 Hours**	**00:00 Hours**	**30:00** **Hours**
Module 4: Prepare for execution of fish and sea food processing	06:00 Hours	20:00 Hours	00:00 Hours	00:00 Hours	26:00 Hours
Module 5: Food Microbiology	04:00 Hours	00:00 Hours	00:00 Hours	00:00 Hours	04:00 Hours
FIC/N4003 **Execution of fish and sea** **food processing** **NOS Version No.: 1.0** **NSQF Level: 4**	**20:00** **Hours**	**40:00** **Hours**	**00:00 Hours**	**00:00 Hours**	**60:00** **Hours**
Module 6: Execution of fish and sea food processing	20:00 Hours	40:00 Hours	00:00 Hours	00:00 Hours	60:00 Hours
FIC/N4004 **Complete documentation** **and record keeping related** **to processing of fish and** **seafood** **NOS Version No.: 1.0** **NSQF Level: 4**	**10:00** **Hours**	**20:00** **Hours**	**00:00 Hours**	**00:00 Hours**	**30:00** **Hours**
Module 7: Document and record information	10:00 Hours	20:00 Hours	00:00 Hours	00:00 Hours	30:00 Hours
FIC/N9001 Ensure Food **safety, hygiene and** **sanitation for processing** **food products** **NOS Version No.: 1.0** **NSQF Level: 4**	**10:00** **Hours**	**20:00** **Hours**	**00:00 Hours**	**00:00 Hours**	**30:00** **Hours**
Module 8: Food safety, hygiene and sanitation for processing fish and sea Food	10:00 Hours	20:00 Hours	00:00 Hours	00:00 Hours	30:00 Hours
DGT/VSQ/N0101 **Employability Skills** **NOS Version No.: 1.0** **NSQF Level: 2**	**12:00** **Hours**	**18:00** **Hours**	**00:00 Hours**	**00:00 Hours**	**30:00 Hours**
Module 9: Employability skills	12:00 Hours	18:00 Hours	00:00 Hours	00:00 Hours	30:00 Hours
Total Duration	**102:00** **Hours**	**168:00** **Hours**	**00:00 Hours**	**00:00 Hours**	**270:00** **Hours**

Module Details

Module 1: Introduction to the training program and overview of food processing industry
Mapped to FIC/N4001, V1.0

Terminal Outcomes:

- Explain food processing and its sub-sectors
- Discuss about fish and sea food processing
- Discuss the roles and responsibilities of the individual in the job
- Describe importance of personal hygiene and sanitation
- Discuss the opportunities available for fish and seafood technicians in food processing industry

Duration: *04:00*	**Duration**: *00:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Introduce each other and build rapport with fellow participants and the trainer. - Define food processing. - List the various sub-sectors of food processing industry. - Describe the fisheries industry in India. - List the various types of fish and seafood products. - Explain the different methods of fish and - seafood processing. - Discuss the future trends and career growth opportunities available to fish and seafood processing technicians. - Discuss the roles and responsibilities of the individual - Describe how to conduct yourself at the workplace	
Classroom Aids:	
White/Black board/ Chart paper, Markers/ computer and projector	
Tools, Equipment and Other Requirements	
Nil	

Module 2: Professional Skills
Mapped to FIC/N4001, v1.0

Terminal Outcomes:

- Discuss the attributes of desirable professional behaviour
- Demonstrate the standard measures undertaken for working effectively

Duration: 04:00	Duration: 06:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Identify personal strengths and weaknesses. - Discuss the importance of workorder in the process. - State the importance of decision making in the job. - State the importance of communicating effectively.	- Apply standard practice to undertake a self-assessment test for identifying strengths and weaknesses. - Plan and prioritise tasks effectively to ensure timely completion. - Demonstrate the ways to analyse situations for identifying problems and making sound decision promptly.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Gloves, hair net, shoe cover, soap dispenser, hand sanitizer, ear plugs, masks, aprons/lab coats eye protection, hard hats, gloves, rubber boots, etc.	

Module 3: Prepare work area and equipment for fish and sea food processing
Mapped to FIC/N4001, V1.0

Terminal Outcomes:

- Discuss the tasks to be performed to prepare for fish and sea food processing
- State the importance of maintaining tools and equipment effectively

Duration: 32:00	Duration: 44:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- List the different equipment used in the fish and seafood processing. - List the materials and equipment used in cleaning and maintenance of the work area and machineries . - Explain the cleaning processes used to clean the work area. - Describe how to dispose waste as per organizational standards.	- Show how to clean the work area and equipment to prepare for production. - Display the procedure to rectify faults and minor repairs in process machinery. - Show how to maintain the tools and machines utilised for production. - Demonstrate the use of different equipment used in fish and seafood processing.

Classroom Aids:

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook

Tools, Equipment and Other Requirements

Filtering machine, Scaling machine, Shelling machine, Slitting machine, Grounding machine, Opening machine, Thermoformers, Moulders, Heat sealers, Can making equipment, Can closers/ sealers, Seam testers, Fillers of all type, Cutting / slitting / trimming equipment, Typing / sieving/ stappling equipment, Closing / sealing equip, Form / fill/ seal equip, Cappers/ crumpers/ hooders, Wrappers, Cartoners, Multipackers, Bundlers, Shrink wrappers and tunnels, Labellers, Coding equipment, Check weighers, Metal detection equipment, Level checking equipment, Code/ lable inspecting equipment, Palletisers, Bottle spotters, Aligners, Container cleaning/ washing/ drying systems, Accumulator/ collectors

Module 4: Prepare for execution of fish and sea food processing
Mapped to FIC/N4002, v1.0

Terminal Outcomes:

- List the tasks to be performed to prepare for fish and sea food processing
- Demonstrate the techniques to be followed to inspect and prepare the raw materials as per desirable standards

Duration: *06:00*	**Duration**: *20:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- List the different varieties of fish and seafood that are processed. - Explain the quality parameters for raw materials to be processed. - Describe the quality assessment methods based on the physical parameters. - Describe the various units of measurement used in the food processing industry. - List the types and categories of packaging materials used for processed fish and seafood. - Discuss the laws and regulations related to product packaging and labeling. - Discuss the storage requirements for raw materials and finished products. - Discuss the quality of food and intake measures to prevent spoilage. - Explain stock rotation based on FIFO/FEFO. - Describe the refrigeration and cold storage facility used for fish and seafood processing. - Describe the storage conditions for all varieties of fish and seafood. - Discuss the documenting procedures for packaging and storing. - Plan the production schedule as per organizational standards and instructions. - Organize for raw material, packaging	- Calculate the requirement of raw materials for desired quantity of finished product processing industry - Calculate the requirement of raw materials for desired quantity of finished product - Support in planning production sequence. - Demonstrate the storage procedures for raw materials and processed food.

materials, manpower, equipment, and machineries for the scheduled production	

Classroom Aids:

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook

Tools, Equipment and Other Requirements

Filtering machine, Scaling machine, Shelling machine, Slitting machine, Grounding machine, Opening machine, Thermoformers, Moulders, Heat sealers, Can making equipment, Can closers/ sealers, Seam testers, Fillers of all type, Cutting / slitting / trimming equipment, Typing / siev ing/ stapling equipment, Closing / sealing equip, Form / fill/ seal equip, Cappers/ crumpers / hooders, Wrappers, Cartoners, Multipackers, Bundlers, Shrink wrappers and tunnels, Labellers, Coding equipment, weighing scale, Metal detection equipment, Level checking equipment, Code/ lable inspecting equipment, Palletisers, Bottle spotters, Aligners, Container cleaning/ washing/ drying systems, Accumulator/ collectors, refrigerator

Module 5: Food Microbiology
Mapped to FIC/N4002, v1.0

Terminal Outcomes:

- Describe food microbiology and its use in fish and sea food processing
- Demonstrate the techniques of food preservation

Duration: *04:00*	**Duration**: *00:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- List the types of food microbes. - Explain the causes for food spoilage. - Describe the process for food spoilage. - Explain the criteria to check food spoilage. - Discuss the need for food preservation. - Discuss different types of food preservation processes	
Classroom Aids:	
White/Black board/ Chart paper, Markers/ computer and projector, Trainer's guide, student handbook	
Tools, Equipment and Other Requirements	
Nil	

Module 6: Execution of fish and sea food processing
Mapped to FIC/N4003, v1.0

Terminal Outcomes:

- Discuss the stages involved in execution of fish and sea food processing
- Demonstrate the tasks to be performed for fish and sea food processing

Duration: 20:00	Duration: 40:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Describe the process of receiving and handling raw materials. - Explain the process of grading and sorting varieties of fish and seafood. - Describe the methods of preprocessing fish and seafood - Explain the methods of processing fish and seafood	• Demonstrate the process of cleaning the work area and machineries after production • Demonstrate the process of sorting and grading of fish and seafood based on various factors • Demonstrate the pre processing methods of fish and seafood • Demonstrate various methods of Fish & seafood processing such as salting, smoking, canning, packaging, fermentation etc.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
White/Black board/ Chart paper, Markers/ computer and projector, Trainer Guide, Student Handbook, Filtering machine, Scaling machine, Shelling machine, Grounding machine, Opening machine, Thermoformers, Moulders, Heat sealers, Can making equipment, Can closers/ sealers, Seam testers, Fillers of all type, Cutting / slitting / trimming equipment, Typing / sieving/ stappling equipment, Closing / sealing equipment, Form / fill/ seal equip, Cappers/ crumpers/ hooders, Wrappers, Cartoners, Multipackers, Bundlers, Shrink wrappers and tunnels, Labellers, Coding equipments, Check weighers, Metal detection equipment, Level checking equipment, Code/ lable inspecting equipment, Printing equipment, Palletisers, Bottle spotters, Aligners, Container cleaning/ washing/ drying systems, Accumulator/ collectors, Unloaders, stackers, Feeding/ orienting equipment, various types of fish and sea food	

Module 7: Document and record information

Mapped to FIC/N4004, v1.0

Terminal Outcomes:

- Discuss the importance of recording information in production
- Demonstrate the standard practice followed to record production information

Duration: *10:00*	**Duration**: *20:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Discuss the importance of documentation and maintaining records during the entire work process. - List the information to be recorded as per the production work.	- Document necessary information such as production plan, process parameters, and finished products. - Prepare records to record information as per production and organisational requirements.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Food safety manual, logbooks.	

Module 8: Food safety, hygiene and sanitation for processing fish and sea food
Mapped to FIC/N9001 v1.0

Terminal Outcomes:

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

Duration: *10:00*	Duration: *20:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Discuss the importance of safety, hygiene and sanitation in the fish and sea food processing industry. - Discuss the relevant HACCP principles to be followed in the fish and sea food processing industry. - Discuss the roles and responsibilities of the individual in the job. - Describe importance of personal hygiene and sanitation. - Describe Fire Safety.	- Demonstrate the steps to be performed to maintain a safe and hygiene workplace. - Demonstrate the steps to be performed to implement HACCP practices for ensuring food safety. - Roleplay a situation depicting the safety practices to be followed at the workplace. - Roleplay a situation depicting Fire Safety practices to be followed at the workplace.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Protective gloves, head caps, aprons, safety goggles, safety boots, mouth covers, sanitizer, food safety manual ,logbooks etc.	

Module 9: Employability skills
Mapped to DGT/VSQ/N0101, v 1.0

Terminal Outcomes:

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

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

Annexure

Trainer Requirements

<table>
<tr><th colspan="7">Trainer Prerequisites</th></tr>
<tr><th rowspan="2">Minimum Educational Qualification</th><th rowspan="2">Specialization</th><th colspan="2">Relevant Industry Experience</th><th colspan="2">Training Experience</th><th rowspan="2">Remarks</th></tr>
<tr><th>Years</th><th>Specialization</th><th>Years</th><th>Specialization</th></tr>
<tr><td>B.Sc or graduate/B.Tech/BE</td><td>Food technology or food engineering</td><td>3</td><td>Food processing</td><td>1</td><td>Food processing</td><td></td></tr>
<tr><td>M.Sc/M.Tech/ME</td><td>Food technology or food engineering</td><td>2</td><td>Food processing</td><td>1</td><td>Food processing</td><td></td></tr>
<tr><td>Diploma /certificate course</td><td>(Food Technology / Food Engineering /packaging/Home science, or allied sector</td><td>4</td><td>Food processing</td><td>1</td><td>Food processing</td><td></td></tr>
</table>

<table>
<tr><th colspan="2">Trainer Certification</th></tr>
<tr><th>Domain Certification</th><th>Platform Certification</th></tr>
<tr><td>Certified for Job Role: "Fish and Sea Food Processing Technician" mapped to QP: "FIC/Q4001, v3.0". Minimum accepted score is 80%.</td><td>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%.</td></tr>
</table>

Assessor Requirements

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

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Fish and Sea Food Processing Technician" mapped to QP: "FIC/ Q4001, v3.0". 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 (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.

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
HACCP	Hazard Analysis and Critical Control Points
GMP	Good Manufacturing Practices
GHP	Good Hygiene Practices