



Facilitator Guide



Sector
Food Processing

Sub-Sector
Fish and Sea Food

Occupation
Processing

Reference ID: FIC/Q4001, Version 3.0
NSQF level: 3

Fish and Sea Food Processing Technician



Shri Narendra Modi
Prime Minister of India

“ Skilling is building a better India.
If we have to move India towards
development then Skill Development
should be our mission. ”

Acknowledgements

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The preparation of this participant Handbook would not have been possible without the support of the Food Processing Industries. The Industry feedback has been extremely encouraging from inception to conclusion & it is with their inputs that we have tried to bridge the skill gaps existing today in the Industry.

This participant handbook is dedicated to all the aspiring youth who desire to achieve special skills which would be a lifelong asset for their future endeavors and help them make a bright career in the Food Processing Sector.

About this Guide

The Facilitator Guide for Fish and Sea Food Processing Technician has been developed to guide the trainees on how to impart training on industry-related skills. The Facilitator Guide is aligned to the Qualification Pack (QP) and the National Occupational Standards (NOS) drafted by the 'Food Processing' sector and ratified by National Skill Development Corporation.

It includes the following National Occupational Standards (NOS):

- FIC/N4001: Prepare and maintain work area and process machineries for processing fish and seafood
- FIC/N4002: Prepare for execution of fish and sea food processing
- FIC/N4003: Execution of fish and sea food processing
- FIC/N9001: Ensure food safety, hygiene and sanitation for processing food products
- FIC/N4004: Complete documentation and record keeping related to processing of fish and seafood
- DGT/VSQ/N0101: Employability Skills (30 Hours)

Post this training, the participant will be able to perform tasks as an Grain Mill Operator. We hope that this Facilitator guide provides sound learning support to the aspiring trainers and the trainees.

Symbols Used



Ask



Explain



Elaborate



Notes



Objectives



Do



Demonstrate



Activity



Team Activity



Facilitation Notes



Practical



Say



Resources



Example



Summary



Role Play



Learning Outcomes

Table of Contents

S. No	Modules and Units	Page No
1.	Introduction (FIC/N4001)	1
	Unit 1.1 - Introduction to the Training Programme	3
	Unit 1.2 - Introduction to the Food Processing Industry	6
	Unit 1.3 - Introduction to the Fish and Sea food Processing	8
	Unit 1.4 - Fish and Sea Food Processing	10
	Unit 1.5 - Attributes of a Fish and Sea Food Processing Technician	12
	Unit 1.6 - Workplace Ethics	14
2.	Food Safety, Hygiene and Sanitation for Processing Food Products (FIC/N9001)	17
	Unit 2.1 - Sanitation and Hygiene	19
	Unit 2.2 - Safety Practices	21
	Unit 2.3 - Good Manufacturing Practices (GMP)	23
	Unit 2.4 - Hazard Analysis and Critical Control Point (HACCP)	25
3.	Prepare and Maintain Work Area and Process Machineries for Processing of Fish and Sea Food (FIC/N4001)	29
	Unit 3.1 - Equipment used for Fish and Sea food Processing	31
	Unit 3.2 - Sanitisation of the Work Area	33
	Unit 3.3 - Cleaning Processes	36
	Unit 3.4 - Disposal of Waste Materials	40
4.	Prepare for Execution of Fish and Sea Food Processing (FIC/N4002)	43
	Unit 4.1 - Types of Fish and Sea Food	45
	Unit 4.2 - Quality Parameters	47
	Unit 4.3 - Basic Calculations	49
	Unit 4.4 - Introduction to Food Microbiology, Food Spoilage and Food Preservation	52
	Unit 4.5 - Food Safety Practices	54
	Unit 4.6 - Plan Production Sequence	56



S. No	Modules and Units	Page No
5.	Execution of Fish and Sea Food Processing (FIC/N4003)	59
	Unit 5.1 - Handling Grading and Sorting of Raw Material	61
	Unit 5.2 - Pre-Processing and Processing of Fish and Sea Food	63
	Unit 5.3 - Methods of Fish and Sea Food Processing	65
6.	Post Production Activities (FIC/N4002)	69
	Unit 6.1 - Packaging	71
	Unit 6.2 - Refrigeration and Cold Storage Facility	73
	Unit 6.3 - Post Production Cleaning and Maintenance	76
7.	Complete Documentation and Record Keeping Related to Processing of Fish and Sea Food (FIC/N4004)	81
	Unit 7.1 - Documentation and Record Keeping	83
8.	Employability Skills (DGT/VSQ/N0101) (30 Hrs.)	87
	Employability Skills is available at the following location :	
	https://www.skillindiadigital.gov.in/content/list	
	Scan the QR code below to access the ebook	
		
9.	Annexures	89
	Annexure I: Training Delivery Plan	90
	Annexure II: Assessment Criteria	112
	Annexure III: List of QR Codes Used in PHB	118





1. Introduction

Unit 1.1 - Introduction to the Training Programme

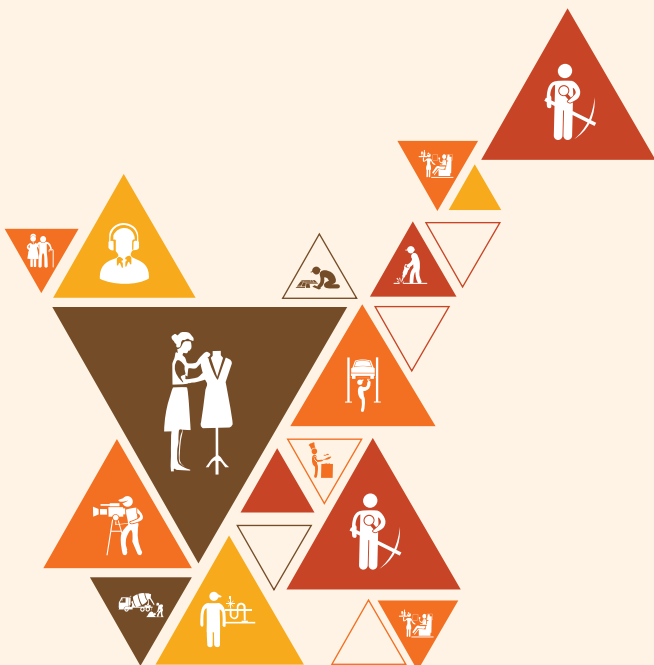
Unit 1.2 - Introduction to the Food Processing Industry

Unit 1.3 - Introduction to the Fish and Sea food Processing

Unit 1.4 - Fish and Sea Food Processing

Unit 1.5 - Attributes of a Fish and Sea Food Processing Technician

Unit 1.6 - Workplace Ethics



Key Learning Outcomes



By the end of this module, the participants will be able to:

1. Explain the purpose of training
2. Discuss the National Occupational Standards and the Qualification Pack
3. Define food processing
4. List the various sectors of the food processing industry
5. Describe the various stages of food processing for converting raw materials to food products
6. Describe the fisheries industry in India
7. List the various types of fish and sea food products
8. State the methods of processing fish and sea food
9. State the roles and responsibilities of a fish and sea food processing technician
10. State how to conduct yourself at a workplace
11. Undertake a self-assessment test

Unit 1.1: Introduction to the Training Programme

Unit Objectives

By the end of this unit, the Participants will be able to:

1. Explain the purpose of training
2. Discuss the National Occupational Standards and the Qualification Pack.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Fish and Sea Processing Technician, Images and videos of Fish and Sea Processing Technician.

Say

- Good morning, participants and a very warm welcome to this training program on “Fish and Sea Processing Technician”.

Do

- Thank all the participants for joining and being a part of this training program
- Introduce yourself briefly to the participants, your name and background, and your role in the training program
- Tell them that you will put them at ease by playing a game. This game is meant to break the ice between everyone and get the trainees interested in the class.
- Explain the game rules you will play as an “Ice Breaker.”

Activity

Activity Name: Name Game (Ice Breaker)

Objective: This Activity is focused on breaking the ice between the participants so that they can come up confidently in putting forward their opinion

Type of Activity: Group Activity

Resources to be used: Participant Handbook, Pen, Notebook, Writing Pad, etc.

Duration of the Activity: 60 minutes

Instructions:

- Arrange the class in a semi-circle/circle
- Say your name aloud and start playing the game with your name.

- Say, “Now, each of you shall continue with the game with your names till the last person in the circle/ semi-circle participates”.
- Listen to and watch the trainees while they play the game.
- Ask questions and clarify if you cannot understand or hear a trainee.
- Discourage any queries related to one’s financial status, gender orientation or religious bias during the game
- Try recognising each trainee by their name because it is not recommended for a trainer to ask the name of a trainee during every interaction

Outcome: This Activity has focused on breaking the ice between the participants so that they can come up confidently, putting forward their opinion.

Ask

- What is QP and NOS?
- What is the importance of QP and NOS?

Elaborate

- Purpose and Benefits of the Training Programme:
The training programme is based upon the National Occupational Standards for the food processing sector. The National Occupational Standards have been described in the following subsection of this chapter.
- Introduction to QP and NOS:
A QP consists of a set of National Occupational Standards (NOS). NOS specify the standard competency a worker must achieve when carrying out a function at the workplace.

Activity

Activity Name: Group Discussion

Objective: This Activity is focused on encouraging trainees to share their views and experiences related to the topics covered in the session.

Resources: Flipchart paper and markers

Time Duration: 20 minutes

Instructions:

- Divide the trainees into groups of 4.
- Provide each group with a flipchart paper and markers.
- Ask each group to discuss the either one of the following questions:
 - How do you think the topics covered are relevant to your job roles?
 - How can you apply the knowledge gained from this session in your work?

- Ask each group to write down their answers on the flipchart paper.
- After 10 minutes, ask each group to present their answers to the rest of the class.

Outcome: Trainees will be able to share their views and experiences related to the topics covered in the session, and will gain a better understanding of how the topics are relevant to their job roles.

Notes for Facilitation

- Create a positive learning environment by encouraging trainees to participate and express their views.
- Ensure that the session is interactive and engaging by using a variety of teaching methods such as presentations, discussions and activities.
- Encourage trainees to ask questions and clarify their Doubts about training program, QP, NOS and others.
- Provide feedback and positive reinforcement to trainees to encourage their learning and development.

Unit 1.2: Introduction to the Food Processing Industry

Unit Objectives

By the end of this unit, the Participants will be able to:

1. Define food processing
2. List the various sectors of the food processing industry
3. Describe the various stages of food processing for converting raw materials to food products

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Food Processing, Images and Videos related to Food Processing.

Say

- Good morning, participants and a very warm welcome to this training program on “Fish and Sea Processing Technician”. Today we will discuss about the topic Introduction to the Food Processing Industry.

Do

- Start the session by presenting a brief overview of the food processing industry, its significance, and how it contributes to the economy.
- Discuss the journey of food from harvest to consumer, highlighting the various stages involved in food processing, including sorting, cleaning, packaging, and distribution.
- Use real-life examples to illustrate the importance of food processing and how it affects our daily lives.

Ask

- What do you know about the food processing industry?
- How do you think food gets from the farm to your plate?
- Why is it important to process food before it is consumed?

Elaborate

- **Food Processing:** Define food processing and explain why it is necessary. Discuss the various types of food processing, including preservation, packaging, and transportation. Emphasize the importance of food safety, quality, and sustainability in the food processing industry.
- **Journey of Food from Harvest to Consumer:** Explain the stages involved in food processing, including sorting, cleaning, packaging, and distribution. Discuss the various technologies and techniques used in each stage, including refrigeration, freezing, canning, and dehydration. Provide examples of different types of food processing, such as meat processing, dairy processing, and bakery processing.

Activity

Activity Name: Food Journey Map

Objective of the Activity: To understand the journey of food from harvest to consumer.

Resources: Whiteboard or flipchart, marker pens

Time Duration: 30 minutes

Instructions:

- Draw a large map of the journey of food from harvest to consumer on the whiteboard or flipchart.
- Divide the participants into groups of 3-4 and provide them with different colored markers.
- Instruct each group to choose a specific food product (e.g., apple, bread, milk) and plot the journey of that product on the map using their colored markers.
- Encourage the groups to include all the steps involved in the journey of their chosen food product.
- Once all the groups have completed their food journey maps, bring everyone together to share their findings and discuss the commonalities and differences between the different food products.

Outcome: Participants will have a visual representation of the journey of food and a deeper understanding of the complexity of the food processing industry.

Notes for Facilitation

- Encourage participation and discussion throughout the session.
- Create a comfortable and open learning environment for participants to ask questions and share their experiences.
- Provide real-life examples and case studies to illustrate the concepts covered in the class.
- Emphasize the importance of food safety and quality in the food processing industry.
- Highlight the various career opportunities available in the food processing industry.

Unit 1.3: Introduction to the Fish and Sea food Processing

Unit Objectives

By the end of this unit, the Participants will be able to:

1. Describe the fisheries industry in India.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Fish and Sea food Processing, Images and Videos related to Fish and Sea food Processing.

Say

- Good morning trainees today, we will be discussing the different techniques, regulations, and challenges involved in processing fish and seafood in India.

Do

- Begin the class by showing the presentation slides on Fish and Seafood Processing in India.
- Discuss the importance of the fishing industry in India and its contribution to the economy.
- Talk about the different types of fish and seafood products available in India, and the different techniques used to process them.
- Discuss the challenges involved in fish and seafood processing, such as regulations, quality control, and safety standards.
- Provide examples of successful fish and seafood processing businesses in India.
- Allow time for questions and discussion.

Ask

- What are some of the different types of fish and seafood products available in India?
- What are some of the challenges involved in fish and seafood processing in India?

Elaborate

Fish and Sea Food Processing in India: Fish and Seafood processing in India involves a variety of techniques such as freezing, canning, drying, and smoking. The industry is mainly concentrated in the coastal regions of the country and is an important source of employment and export revenue.

Demonstrate

- Demonstrate the cleaning and deboning of a fish and seafood product, and discuss the importance of quality control and safety standards.

Activity

Activity Name: Fish and Seafood Processing Simulation

Objective of the Activity: To simulate the process of fish and seafood processing and identify potential challenges and solutions.

Resources: Samples of different types of fish and seafood products, processing equipment, and handouts with processing techniques and regulations.

Time Duration: 30-45 minutes

Instructions:

- Divide the participants into small groups and provide them with samples of different types of fish and seafood products.
- Instruct them to simulate the process of processing the product using the provided equipment and handouts.
- Encourage them to identify any challenges they face during the simulation and brainstorm solutions to overcome them.
- Allow each group to present their simulation and discuss their findings and solutions.

Outcome: Participants will gain a better understanding of the challenges involved in fish and seafood processing and develop problem-solving skills.

Notes for Facilitation

- Encourage active participation and discussion among participants.
- Provide feedback and guidance on the processing techniques demonstrated during the Activity.
- Emphasize the importance of maintaining high quality and safety standards in fish and seafood processing.
- Discuss potential career opportunities in the fishing and seafood processing industry in India.
- Encourage participants to research and explore further on the topic of fish and seafood processing in India.

Unit 1.4: Fish and Sea Food Processing

Unit Objectives

By the end of this unit, the Participants will be able to:

1. List the various types of fish and sea food products
2. State the methods of processing fish and sea food.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Fish and Sea food Processing, Images and Videos related to Fish and Sea food Processing.

Say

- Good morning trainees, today we will learn about the different types of fish and seafood products and the methods used to process them.
- By the end of this session, you will have a better understanding of how fish and seafood products are processed for consumption.

Do

- Begin the session by introducing the topic of fish and seafood processing and explaining its importance in the food industry.
- Use the PowerPoint presentation to guide the session and explain the different types of fish and seafood products and their processing methods.
- Allow time for questions and discussion throughout the session.

Ask

- What are some common fish and seafood products you have tried before?
- How do you think fish and seafood products are processed?
- Why do you think it's important to understand the different methods of fish and seafood processing?

Elaborate

- **Types of fish and seafood products:** Fish, shrimp, lobster, crab, oyster, clams, and mussels are some of the commonly consumed seafood products.
- **Different methods of fish and seafood processing:** There are various methods used for processing fish and seafood products, including freezing, canning, smoking, salting, and drying.

Demonstrate

- Provide visual aids such as samples of different types of fish and seafood products and charts illustrating different processing methods.

Activity

Activity Name: Fish and Sea Food Processing Game

Objective of the Activity: To reinforce learning of different methods of fish and sea food processing

Resources: Cards with different fish and sea food products and corresponding processing methods, timer

Time duration: 15-20 minutes

Instructions:

- Divide participants into small groups
- Distribute cards to each group
- Set the timer for 10 minutes
- Ask each group to match the fish and sea food products to their respective processing methods
- The group that matches the most in the given time wins

Outcome: Participants will have a better understanding of different methods of fish and sea food processing

Notes for Facilitation

- Encourage participants to ask questions throughout the session.
- Use real-life examples to make the session more engaging.
- Emphasize the importance of following proper food safety and handling practices in fish and sea food processing.
- Discuss the economic and cultural significance of fish and sea food processing in different regions.
- Take breaks as needed to ensure participants are engaged and focused.

Unit 1.5: Attributes of a Fish and Sea Food Processing Technician

Unit Objectives

By the end of this unit, the Participants will be able to:

1. State the roles and responsibilities of a fish and sea food processing technician.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Attributes of a Fish and Sea Food Processing Technician, Images and Videos related to Attributes of a Fish and Sea Food Processing Technician.

Say

- Good morning trainees, today we will learn about the attributes of a fish and seafood processing technician. In this session, we will discuss the roles and responsibilities of a technician in this field.
- We will also explore the essential attributes that a technician should possess to be successful in this career.

Do

- Introduce the topic and ask participants what they think the roles and responsibilities of a fish and seafood processing technician are.
- Share handouts and case studies with the participants and discuss them in detail.
- Use examples to illustrate the key attributes that a technician should possess, such as attention to detail, critical thinking, problem-solving, and teamwork.
- Engage participants in discussions and activities to help them understand the importance of each attribute.

Ask

- What do you think are the primary roles and responsibilities of a fish and seafood processing technician?
- What attributes do you believe are necessary for a technician to be successful in this field?

Elaborate

- **Roles of a Fish and Seafood Processing Technician:** The technician is responsible for ensuring that the fish and seafood products are processed efficiently and effectively. They are responsible for operating and maintaining the processing equipment, monitoring and adjusting the processing parameters, and ensuring that the products meet quality standards.
- **Responsibilities of a Fish and Seafood Processing Technician:** The technician is responsible for handling and preparing the fish and seafood products, performing quality control checks, implementing food safety protocols, and ensuring that the products are packaged and labeled correctly.

Demonstrate

- Demonstrate the proper handling and preparation of fish and seafood products. Use a video or visual aids to help participants understand the techniques used in processing and packaging these products.

Team Activity

Activity Name: Role Play

Objective of the Activity: To help participants understand the roles and responsibilities of a fish and seafood processing technician.

Resources: Whiteboard and markers

Time Duration: 30 minutes

Instructions:

- Divide participants into groups of three or four.
- Assign each group a different case study related to fish and seafood processing.
- Ask each group to read and discuss the case study and identify the roles and responsibilities of a fish and seafood processing technician.
- Each group should present their findings to the rest of the participants.
- Facilitate a discussion on the key takeaways from the Activity.

Outcome: Participants will be able to identify the roles and responsibilities of a fish and seafood processing technician.

Notes for Facilitation

- Encourage participation and collaboration among participants.
- Create a safe and respectful learning environment.
- Use real-life examples to help participants connect with the content.
- Provide participants with handouts and case studies to help them understand the roles and responsibilities of a fish and seafood processing technician.
- Use visuals and demonstrations to help participants understand the techniques used in processing fish and seafood products.
- Encourage participants to ask questions and engage in discussions to deepen their understanding of the content.

Unit 1.6: Workplace Ethics

Unit Objectives

By the end of this unit, the Participants will be able to:

1. State how to conduct yourself at a workplace.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Workplace Ethics, Images and Videos related to Workplace Ethics.

Say

- Good morning trainees, today we will learn about the Workplace Ethics.
- Today, we will discuss about how to conduct ourselves at workplace and the importance of cleaning and sanitising in the workplace.
- Let's begin with a brief introduction of workplace ethics and how it can impact our career and organization.

Do

- Introduce the concept of workplace ethics and explain its importance in maintaining a healthy work environment.
- Discuss the different ways in which one can conduct themselves in a professional manner in the workplace and the benefits of doing so.
- Emphasize the importance of cleaning and sanitising in the workplace, and its role in preventing the spread of infectious diseases.
- Use case studies to illustrate how unethical behavior at the workplace can impact the individual, team and organization.
- Highlight the policies and guidelines set by the organization regarding workplace ethics, and how to adhere to them.

Ask

- What do you understand by the term 'workplace ethics'?
- How can workplace ethics affect an individual's career growth and the organization as a whole?
- Why is it important to maintain cleanliness and sanitisation in the workplace?

Elaborate

- **Conducting oneself at the workplace:** This section will cover topics such as dress code, punctuality, communication skills, teamwork, attitude, respect for colleagues and supervisors, and maintaining confidentiality.
- **Cleaning and sanitising:** This section will cover topics such as the importance of cleaning and sanitising, methods of cleaning and sanitising, cleaning schedules and procedures, and personal hygiene.

Team Activity

Activity Name: Role-Play

Objective of the Activity: To demonstrate the impact of unethical behavior in the workplace and how it can be avoided.

Resources: Case studies related to workplace ethics.

Time Duration: 20 minutes

Instructions:

- Divide the participants into groups of 4-5 members.
- Provide a case study related to workplace ethics to each group.
- Ask them to read the case study and identify the unethical behavior.
- Ask each group to present their findings to the class.
- Discuss the impact of the unethical behavior on the individual, team and organization.
- Brainstorm and identify ways to avoid such unethical behavior in the future.

Outcome: Participants will learn about the importance of workplace ethics, the impact of unethical behavior, and how to avoid such behavior.

Notes for Facilitation

- Set ground rules at the beginning of the session to ensure that everyone participates respectfully and actively.
- Encourage participants to ask questions and share their experiences related to workplace ethics.
- Use examples and case studies to make the session more engaging and interactive.
- Remind participants to adhere to the policies and guidelines set by the organization regarding workplace ethics.
- Emphasize the importance of maintaining cleanliness and sanitation in the workplace, and provide practical tips and examples to reinforce the message.

Answers to Exercises for PHB

A. Answer the following questions by choosing the correct option:

- a. (iii) processing
- b. (ii) preservation
- c. (i) consumers
- d. (iii) third
- e. (iii) Primary
- f. (ii) primary and secondary
- g. (iv) Preparing icing mix and top the baked products with icing
- h. (ii) principles
- i. (iii) Smoking
- j. (iv) moisture or water

B. Answer the following questions briefly.

- a. Washing - Primary Processing
- b. Scaling - Primary Processing
- c. Finning - Primary Processing
- d. Filleting - Secondary Processing
- e. Marinating - Secondary Processing
- f. Heading - Primary Processing
- g. Freezing - Secondary Processing
- h. Gilling - Primary Processing
- i. Gutting - Primary Processing
- j. Salting - Primary Processing

Key Learning Outcomes



By the end of this module, the participants will be able to:

1. State the personal hygiene and sanitation guidelines
2. State the food safety hygiene standards to follow in a work environment
3. Follow the fire safety practices in the work area.
4. State the importance of safety, hygiene, and sanitation in the food processing industry
5. Follow the industry standards to maintain a safe and hygienic workplace
6. State the storage requirements for raw materials and finished products
7. Determine the quality of food and intake measures to prevent spoilage
8. Follow stock rotation based on FIFO/FEFO
9. Follow HACCP principles to eliminate food safety hazards in the process and products

Unit 2.1: Sanitation and Hygiene

Unit Objectives

By the end of this unit, the Participants will be able to:

1. State the personal hygiene and sanitation guidelines
2. State the food safety hygiene standards to follow in a work environment.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Sanitation and Hygiene, Images and Videos related to Sanitation and Hygiene.

Say

- Good sanitation and hygiene practices are crucial for maintaining good health.
- In this session, we will learn about personal sanitation and the importance of maintaining good hygiene habits.
- Let us work together to understand and adopt these practices in our daily lives.

Do

- Begin by introducing yourself and getting to know the trainees.
- Display the handouts on personal sanitation and explain the importance of each topic.
- Discuss each topic in detail and encourage the trainees to ask questions and share their experiences.
- Demonstrate proper handwashing techniques and distribute hand sanitizer and tissues.
- Conclude the session by emphasizing the importance of personal sanitation and hygiene and encourage the trainees to adopt these practices in their daily lives.

Ask

- What are some personal sanitation habits that you follow regularly?
- What are some challenges you face in maintaining good hygiene practices?
- How can good sanitation and hygiene practices contribute to a healthy lifestyle?

Elaborate

- Personal sanitation includes washing hands with soap and water, not smoking, spitting or coughing in public areas, and seeking timely medical treatment.
- Good hygiene practices can help prevent the spread of diseases and infections.

Demonstrate

- Demonstrate proper handwashing techniques, including washing with soap and water for at least 20 seconds and drying with a clean towel or air dryer.
- Demonstrate proper use of hand sanitizer and tissues.

Activity

Activity Name: Handwashing Challenge

Objective: To reinforce the importance of proper handwashing techniques.

Resources: Soap and water, timer, hand towels, hand sanitizer.

Time Duration: 15 minutes.

Instructions:

- Divide the trainees into pairs.
- Each pair will take turns washing their hands while the other partner times them for 20 seconds.
- After each round, the partners will switch roles.
- The pair with the shortest combined time wins the challenge.

Outcome: Trainees will be able to demonstrate proper handwashing techniques and understand the importance of washing hands for at least 20 seconds.

Notes for Facilitation

- Encourage participation and engagement from all trainees.
- Provide clear and concise instructions.
- Create a safe and respectful learning environment.
- Emphasize the importance of personal sanitation practices in preventing the spread of diseases and infections.
- Provide examples and scenarios to help trainees understand the relevance of the topic.
- Be sensitive to cultural differences and practices related to sanitation and hygiene.

Unit 2.2: Safety Practices

Unit Objectives

By the end of this unit, the Participants will be able to:

1. Follow the fire safety practices in the work area.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Safety Practices, Images and Videos related to Safety Practices.

Say

- Good morning participants, today, we will be discussing symbols and emergency measures, as well as fire safety measures, types of fire and fire extinguishers, and how to use them.
- Safety is of utmost importance in any workplace, and it is essential that we take appropriate measures to prevent accidents and respond effectively in case of an emergency.

Ask

- Have you ever faced an emergency situation at your workplace? How did you respond to it?
- Can you identify any safety symbols that are commonly used in your workplace?
- What are some of the measures that can be taken to prevent accidents at the workplace?

Elaborate

- **Symbols:** Safety symbols are graphic designs that are used to convey information about hazards and safety precautions. They are commonly used in workplaces to warn employees of potential dangers and to provide information about the safe handling of equipment and materials.
- **Emergency Measures:** Emergency measures are procedures that need to be followed in case of an emergency, such as a fire or a natural disaster. These measures include evacuation procedures, first aid procedures, and emergency contact information.

Demonstrate

- Demonstrate the different types of fire and the corresponding fire extinguishers that can be used to extinguish them. Explain the proper use of each type of fire extinguisher.
- Demonstrate the proper use of a fire bucket, including how to fill it with water and how to use it to extinguish small fires.

Activity

Activity Name: Fire Drill

Objective of the Activity: To practice emergency evacuation procedures and using fire extinguishers

Resources: Fire alarm bell (optional), fire safety posters, fire extinguishers, fire buckets

Time Duration: 30 minutes

Instructions:

- Explain to the participants that you will be conducting a fire drill to practice emergency evacuation procedures and using fire extinguishers.
- Sound the fire alarm bell (or use a whistle or loudspeaker) to initiate the drill.
- Instruct the participants to follow the emergency evacuation procedures, using the designated escape routes.
- Once everyone is outside, demonstrate the proper use of a fire extinguisher and instruct the participants to use it to extinguish a small fire (using a controlled fire or a fire simulator).
- Alternatively, if fire extinguishers are not available, demonstrate the proper use of fire buckets and instruct the participants to use them to extinguish a small fire.
- Debrief the Activity by discussing the strengths and weaknesses of the participants' response to the emergency and providing feedback on the proper use of fire extinguishers and fire buckets.

Outcome: After conducting the Activity, the trainees will have a better knowledge about fire safety and measures to be taken during outbreak of sudden fire.

Notes for Facilitation

- Always emphasize the importance of safety in the workplace and encourage the participants to take safety precautions seriously.
- Be prepared to answer any questions or concerns that the participants may have regarding safety measures and emergency procedures.
- During the Activity, closely monitor the participants' response to the emergency and ensure that they follow the proper evacuation procedures.
- Provide clear instructions and guidance during the Activity, especially when demonstrating the use of fire extinguishers and fire buckets.
- After the Activity, provide feedback and suggestions for improvement to help the participants better prepare for emergencies in the future.

Unit 2.3: Good Manufacturing Practices (GMP)

Unit Objectives

By the end of this unit, the Participants will be able to:

1. State the importance of safety, hygiene, and sanitation in the food processing industry
2. Follow the industry standards to maintain a safe and hygienic workplace.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Good Manufacturing Practices, Images and Videos related to Good Manufacturing Practices.

Say

- Good morning participants, today we will learn about the importance of GMP in food manufacturing, and the key principles and guidelines that should be followed to ensure safe and high-quality products.
- By the end of this session, you will be able to understand the basic concepts of GMP, identify the main components of GMP, and apply the principles of GMP in your work environment.

Do

- Start the session with a brief introduction on GMP, its importance in food manufacturing, and the topics to be covered.
- Use the PowerPoint presentation to explain the key concepts and principles of GMP, including facility design and maintenance, personnel hygiene, equipment and utensil cleaning and maintenance, raw materials and ingredient control, and quality control.
- Hand out the GMP checklist and discuss the key elements that should be considered to comply with GMP regulations.
- Use examples from the food industry to illustrate the implementation of GMP principles in different settings.
- Encourage questions and discussion throughout the session to ensure active participation and engagement.

Ask

- What is your understanding of GMP and why is it important?

Elaborate

- Good Manufacturing Practices (GMP) is a set of guidelines and principles that are essential to ensure the safety and quality of food products.
- GMP covers all aspects of food manufacturing, from facility design and maintenance to personnel hygiene, equipment and utensil cleaning and maintenance, and quality control.
- Compliance with GMP regulations is mandatory for food manufacturers to ensure that their products are safe and of high quality.

Demonstrate

- Show examples of proper personnel hygiene practices, such as hand washing and proper work attire.

Activity

Activity Name: GMP Checklist Exercise

Objective of the Activity: To apply GMP principles to a food manufacturing scenario and identify areas of improvement.

Resources: GMP checklist, whiteboard and markers

Time Duration: 30 minutes

Instructions:

- Divide participants into small groups of 3-4 people.
- Provide each group with a GMP checklist and a scenario of a food manufacturing process.
- Instruct participants to review the scenario and use the GMP checklist to identify areas of compliance and non-compliance.
- Each group should present their findings to the rest of the participants, highlighting the areas of improvement and the measures that should be taken to comply with GMP regulations.

Outcome: Participants will have a better understanding of how to apply GMP principles to real-life situations, and how to identify areas of non-compliance and take corrective actions.

Notes for Facilitation

- Encourage active participation and engagement throughout the session.
- Use real-life examples to illustrate the implementation of GMP principles in different settings.
- Emphasize the importance of GMP compliance in ensuring the safety and quality of food products.
- Provide opportunities for questions and discussion to clarify any Doubts or misunderstandings.
- Encourage participants to apply GMP principles to their work environment and share their experiences and challenges.

Unit 2.4: Hazard Analysis and Critical Control Point (HACCP)

Unit Objectives

By the end of this unit, the Participants will be able to:

1. Follow HACCP principles to eliminate food safety hazards in the process and products.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Hazard Analysis and Critical Control Point (HACCP), Images and Videos related to Hazard Analysis and Critical Control Point (HACCP).

Say

- Welcome to the session on Hazard Analysis and Critical Control Point (HACCP).
- Today, we will learn about HACCP principles and how they are used to ensure the safety of food products.
- Throughout the session, feel free to ask any questions you may have. We will be using examples to illustrate the concepts we discuss.

Do

- Introduce the concept of HACCP and explain the seven principles.
- Use examples to illustrate the principles and how they are used in practice.
- Discuss an example of an HACCP plan in detail and explain how it meets the principles.

Ask

- What are some potential hazards in food production?
- How can HACCP help to prevent these hazards?

Elaborate

- HACCP is a risk-based approach to food safety that identifies and controls potential hazards throughout the production process.
- The seven principles of HACCP are: hazard analysis, identification of critical control points, establishment of critical limits, monitoring procedures, corrective actions, record-keeping and Documentation, and verification.
- An effective HACCP plan should identify potential hazards, establish procedures to control those hazards, and provide ongoing monitoring and Documentation to ensure the plan is working.

Demonstrate

- Provide an example of a hazard analysis and critical control point plan for a particular food product, such as a ready-to-eat salad. Use this example to demonstrate how the principles of HACCP are applied in practice.

Activity

Activity Name: HACCP Plan Development

Objective of the Activity: To develop an HACCP plan for a specific food product

Resources: Handouts explaining HACCP principles, whiteboard and markers, examples of HACCP plans

Time Duration: 60 minutes

Instructions

- Divide the participants into small groups.
- Provide each group with a specific food product to develop an HACCP plan for.
- Using the handouts and examples provided, each group should work together to identify potential hazards, critical control points, and monitoring procedures for their product.
- Each group should present their plan to the larger group and receive feedback.

Outcome: Participants will develop an understanding of how to develop an effective HACCP plan for a specific food product.

Notes for Facilitation

- Encourage active participation and questions from the participants.
- Emphasize the importance of following HACCP principles to ensure food safety.
- Use real-world examples to illustrate the concepts discussed.
- Ensure that the HACCP plan development Activity is well-structured and allows for collaboration and feedback.
- Provide opportunities for participants to reflect on how they can apply the principles of HACCP in their own work.

Answers to Exercises for PHB

A. Answer the following questions by choosing the correct option:

- a. Process validation
- b. Equipment maintenance
- c. Personnel hygiene
- d. Sanitation of the work area
- e. Equipment maintenance
- f. Sanitation of the work area
- g. Personnel hygiene
- h. Personnel hygiene

B. Answer the following questions briefly.

- a. Plan preventive measures at that critical point to control the risk vi. Identify critical control points
- b. State the boundary line between safe and unsafe processes iii. Establish critical limits
- c. Specify the corrective actions that should be followed when critical limits are crossed v. Conduct a hazard analysis
- d. Test the HACCP plan and ensure compliance on a regular basis ii. State verification procedures
- e. Maintain a log of situations when critical limits were exceeded i. Follow record-keeping procedures
- f. Evaluate the production process and identify the points where hazards may be introduced v. Establish a monitoring system
- g. State the process of monitoring critical points and critical limits vii. Establish corrective measures



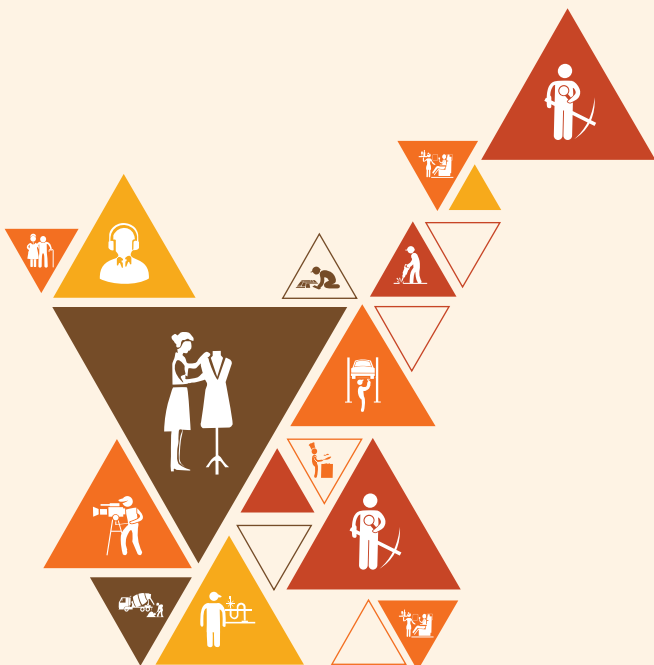
3. Prepare and Maintain Work Area and Process Machineries for Processing of Fish and Sea Food

Unit 3.1 - Equipment used for Fish and Sea food Processing

Unit 3.2 - Sanitisation of the Work Area

Unit 3.3 - Cleaning Processes

Unit 3.4 - Disposal of Waste Materials



Key Learning Outcomes



By the end of this module, the participants will be able to:

1. Identify the different equipment used in the fish and sea food processing
2. State the materials and equipment used in cleaning and maintenance of the work area and machineries
3. List the various cleaning chemicals required
4. State the cleaning processes used to clean the work area
5. Describe how to dispose waste as per organisational standards.

Unit 3.1: Equipment used for Fish and Sea food Processing

Unit Objectives

By the end of this unit, the Participants will be able to:

1. Identify the different equipment used in the fish and sea food processing.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Equipment used for Fish and Sea food Processing, Images and Videos related to Equipment used for Fish and Sea food Processing.

Say

- Good morning participants, today we will learn about equipment used for fish and seafood processing.
- In this session, we will learn about different equipment used in the industry and the safety measures to follow while using them.

Do

- Introduce the topic and share the objectives of the session with the trainees.
- Discuss the different types of equipment used in the industry such as filleting machines, skinning machines, grading machines, and packing machines.
- Talk about the safety measures to follow while using these machines such as wearing safety equipment, proper handling of equipment, and following the manufacturer's instructions.
- Conduct an Activity to reinforce the learning and engage the trainees.

Ask

- What equipment do you think is commonly used in fish and seafood processing?
- What safety measures do you think are important to follow while using fish and seafood processing equipment?

Elaborate

- **Fish and Seafood Processing Equipment:** This session covers the different types of equipment used in the industry, such as filleting machines, skinning machines, grading machines, and packing machines.
- **Precautions and Safety Measures to Follow:** This session also focuses on the safety measures that must be followed while using these machines to ensure the safety of the workers and the quality of the product.

Demonstrate

- Demonstrate the use of some sea food processing equipment to the trainees for better understanding how they work and how to use them safely.

Activity

Activity Name: Fish and Seafood Processing Simulation

Objective of the Activity: To simulate the process of fish and seafood processing and reinforce the learning of different equipment used in the industry.

Resources: Different types of fish and seafood, knives, filleting machines, skinning machines, grading machines, packing machines, safety equipment such as gloves, goggles, and masks.

Time Duration: 30-45 minutes

Instructions:

- Divide the trainees into groups of 4-5 and assign a type of fish or seafood to each group.
- Provide the necessary equipment and safety gear to each group.
- Instruct the groups to follow the process of cleaning, filleting, grading, and packing the fish or seafood using the equipment provided.
- Monitor the groups and provide guidance and feedback as necessary.
- After completion of the Activity, conduct a debrief and discuss the experience and learning outcomes.

Outcome: The trainees will have a hands-on experience of fish and seafood processing using different equipment, reinforcing their learning and improving their understanding of the topic.

Notes for Facilitation

- Ensure the safety of the trainees during the Activity by providing proper safety equipment and monitoring the process.
- Encourage participation and engagement of all trainees in the Activity.
- Emphasize the importance of following safety measures while using equipment in the industry to prevent accidents and ensure the quality of the product.
- Provide opportunities for trainees to ask questions and clarify their Doubts during the session.
- Conclude the session with a recap of the learning outcomes and take feedback from the trainees to improve future sessions.

Unit 3.2: Sanitisation of the Work Area

Unit Objectives

By the end of this unit, the Participants will be able to:

1. State the materials and equipment used in cleaning and maintenance of the work area and machineries
2. List the various cleaning chemicals required.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Sanitisation of the Work Area, Images and Videos of Sanitisation of the Work Area, Cleaning Equipment such as Mops, Buckets, Scrubbers, Brushes, High Spray Nozzle Jets and Sanitisers.

Say

- Welcome everyone to the session on sanitisation of the work area.
- Today, we will learn about the importance of cleaning and sanitising the work area, the types of materials and equipment used for cleaning, the method of cleaning, and the frequency of cleaning process machineries.

Do

- Begin the session with a PowerPoint presentation on cleaning and sanitisation.
- Demonstrate the use of different cleaning equipment such as mops, buckets, scrubbers, brushes, and high spray nozzle jets.
- Explain the importance of using the correct cleaning and sanitising agents and chemicals for different surfaces and equipment.
- Discuss the proper method of cleaning the work area and the frequency of cleaning process machineries.

Ask

- What are the consequences of not properly sanitising the work area?
- How often do you think process machineries should be cleaned?
- What are some of the materials and equipment that can be used for cleaning?

Elaborate

- **Cleaning and Sanitisation:** Cleaning and sanitisation are critical processes in any manufacturing or processing facility. These processes involve the removal of dirt, dust, and other contaminants from surfaces and equipment to prevent the growth and spread of bacteria, viruses, and other harmful microorganisms. Cleaning involves physically removing dirt and debris from surfaces, while sanitisation involves using disinfectants or sanitisers to kill germs and bacteria.
- **Types of materials and equipment used for cleaning:** There are several types of materials and equipment used for cleaning and sanitisation in a manufacturing or processing facility. These include mops, buckets, scrubbers, brushes, high spray nozzle jets, cleaning chemicals and sanitisers, a cleaning or washing tank, and knives and spoons. It is important to use the right equipment for each task to ensure that surfaces and equipment are properly cleaned and sanitised.
- **How to use these materials and equipment:** It is important to train employees on the proper use of cleaning materials and equipment to ensure that they are used safely and effectively. Employees should be taught the correct way to mix cleaning chemicals and sanitisers and the proper use of equipment such as high spray nozzle jets, brushes, and scrubbers. Using the wrong equipment or chemicals can lead to ineffective cleaning or even damage to equipment and surfaces.
- **The method of cleaning the work area:** There is a proper method of cleaning the work area that should be followed to ensure that surfaces and equipment are properly cleaned and sanitised. This includes starting from the top and working Down to prevent the spread of dirt and debris, using the right equipment for each task, and properly disposing of waste materials.
- **The frequency of cleaning process machineries:** The frequency of cleaning process machineries should be based on the type of machinery and the type of product being processed. Some machinery may need to be cleaned after every use, while others may only need to be cleaned on a weekly or monthly basis. It is important to follow the recommended cleaning frequency to ensure that the machinery is properly cleaned and sanitised and to prevent contamination of the product being processed.

Demonstrate

- Demonstrate the proper use of cleaning equipment such as mops, buckets, scrubbers, brushes, and high spray nozzle jets, as well as the proper way to mix cleaning chemicals and sanitisers.

Activity

Activity Name: Cleaning Equipment Relay Race

Objective of the Activity: To reinforce the importance of using the correct cleaning equipment and the proper cleaning method.

Resources: Mops, buckets, scrubbers, brushes, high spray nozzle jets, and cleaning chemicals and sanitisers.

Time Duration: 15-20 minutes

Steps Involve:

- Divide the trainees into two teams.
- Place a set of cleaning equipment at one end of the room and an empty bucket at the other end for each team.

- The first person on each team must run to the cleaning equipment, grab one piece of equipment, and run back to the empty bucket to deposit it.
- The next person on the team must run to the cleaning equipment, grab a different piece of equipment, and run back to the bucket to deposit it.
- Continue until all the equipment has been deposited in the bucket.
- The team with all the equipment properly deposited in the bucket wins.

Outcome: This Activity reinforces the importance of using the correct cleaning equipment

Activity

Activity Name: Cleaning and Sanitizing

Objective of the Activity: To reinforce the learnings of the session and help trainees apply the knowledge in a practical way.

Resources: Cleaning equipment and materials, demonstration work area, Activity sheets

Time Duration: 30 minutes

Steps Involve:

- Divide the trainees into 2 groups.
- Provide them with a demonstration work area and cleaning equipment and materials.
- Ask them to clean and sanitize the work area using the methods and equipment discussed in the session.
- After completion, ask them to fill out an Activity sheet, evaluating their performance and providing feedback.

Outcome: The trainees will be able to apply the knowledge learned in the session and reinforce their understanding of cleaning and sanitizing the work area.

Notes for Facilitation

- Encourage trainees to ask questions and participate in discussions.
- Use real-life examples to help them relate to the importance of maintaining a clean work area and proper sanitization.
- Provide clear and concise instructions on the correct use of cleaning materials and equipment.
- Emphasize the importance of following proper cleaning and sanitization procedures to prevent contamination and ensure product safety.
- Demonstrate the correct technique for cleaning and sanitizing different types of equipment and surfaces.
- Ensure that trainees understand the differences between cleaning, sanitizing, and disinfecting, and when each process is necessary.
- Encourage trainees to take responsibility for maintaining a clean and sanitized work area and to report any issues or concerns to the appropriate person.
- Provide feedback and support throughout the session to reinforce learning and encourage participation.

Unit 3.3: Cleaning Processes

Unit Objectives

By the end of this unit, the Participants will be able to:

1. State the cleaning processes used to clean the work area and process machineries.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Cleaning Processes, Images and Videos of Sanitisation of the Work Area.

Say

- Good morning participants, in this session, we will cover Clean-In-Place, Clean-Out-Of-Place, and Sterilising-In-Place processes.
- The objective of this class is to help you understand the importance of proper cleaning processes and how to effectively clean equipment and work areas to ensure food safety.

Do

- Start the session with an icebreaker Activity to create a comfortable and engaging learning environment.
- Introduce the topics of Clean-In-Place, Clean-Out-Of-Place, and Sterilising-In-Place processes, and provide an overview of each topic using the PowerPoint presentation.
- Use the flipchart to explain the tips for conducting an effective COP process, and the food processing equipment and units that undergo the COP process.
- Demonstrate how to clean different types of equipment and surfaces using the cleaning equipment and materials, and encourage trainees to participate in the demonstration.
- Provide handDouts on cleaning and sanitising solutions, flow rate, and COP process order of tasks, and go through each handDout with the trainees.

Ask

- What cleaning processes are you familiar with?
- Why is it important to use the right cleaning and sanitising solutions?

Elaborate

Clean-In-Place (CIP)

- CIP is a method of cleaning the interior surfaces of pipelines, vessels, equipment, and associated fittings without disassembly.
- It uses a cleaning solution that circulates through the system to remove dirt, debris, and microorganisms.
- The right vessels for the right process should be used to ensure proper cleaning and prevent damage to equipment.
- The right cleaning and sanitizing solutions should be used to ensure effective cleaning and prevent contamination.
- The correct flow rate should be maintained during the process to ensure proper cleaning and prevent damage to equipment.
- All connections should be clean to prevent contamination and ensure proper cleaning.
- The entire process should be monitored and verified to ensure effectiveness.

Clean-Out-Of-Place (COP)

- COP is a process where equipment is removed from its production area and cleaned in a separate area.
- It is typically used for small parts and equipment that cannot be cleaned using CIP.
- To conduct an effective COP process, the order of tasks should be followed, cleaning tanks should be used as much as possible, and tools used in COP should not lead to contamination.
- Food processing equipment and units that undergo the COP process are fittings, gaskets, valves, tank vents, grinders, pumps, knives, and nozzles.

Sterilising-In-Place (SIP)

- SIP is a method of sterilization that takes place within the equipment or system.
- It uses steam or hot water to kill microorganisms and ensure that the equipment is sterile.
- Disinfection is the process of reducing the number of microorganisms to a safe level using disinfectants or chlorine solutions.
- Sterilization is the process of eliminating all microorganisms, including spores, from a surface or object using heat, chemicals, or irradiation.

Air-Pressure Cleaning

- Air-pressure cleaning is a method of cleaning that uses compressed air to remove dirt and debris from surfaces and equipment.
- It is commonly used in areas that are difficult to access or require a gentle cleaning method.

Process of Cleaning the Work Area

- Cleaning the work area involves removing all debris, dirt, and spills from surfaces and floors.
- All tools and equipment should be properly stored and labeled, and all waste should be disposed of properly.
- Work surfaces and equipment should be cleaned regularly to prevent the growth of microorganisms.

Process of Cleaning Machineries, Tools, and Equipment

- Cleaning machineries, tools, and equipment involves disassembling and cleaning all parts, including hard-to-reach areas.
- The correct cleaning solution and cleaning method should be used for each type of equipment.
- All equipment should be properly reassembled and tested before use.

Demonstrate

- Demonstrate the COP process using the samples of food processing equipment and units. Show the trainees how to disassemble the equipment, clean it in tanks, and reassemble it.

Activity

Activity Name: COP Simulation

Objective of the Activity: To practice the COP process and understand the importance of following the correct order of tasks and using the right cleaning tanks and tools.

Resources: Samples of equipment used in the COP process, cleaning and sanitising solutions, cleaning tanks, and tools.

Time Duration: 30 minutes

Steps Involve:

- Divide the trainees into small groups.
- Provide each group with samples of equipment used in the COP process, cleaning and sanitising solutions, cleaning tanks, and tools.
- Instruct each group to follow the correct order of tasks for the COP process, use the right cleaning tanks, using the right tools, and make sure that the tools used Do not lead to contamination.
- Ask the groups to designate a leader who will oversee the entire process and ensure that everyone is following the correct procedures.
- Give the groups 20 minutes to complete the simulation.
- After the simulation is complete, reconvene the groups and ask each leader to share their experience and the challenges they faced during the simulation.

Outcome: By participating in the COP simulation Activity, trainees will understand the importance of following the correct order of tasks and using the right cleaning tanks and tools in the COP process. They will also learn how the use of the right tools and cleaning tanks can prevent contamination and ensure that the equipment is thoroughly cleaned.

Notes for Facilitation

- Be enthusiastic and energetic throughout the session to keep the trainees engaged.
- Ensure that the learning objectives are clear and communicated to the trainees at the beginning of the session.
- Emphasize the importance of following the correct cleaning process and using the right solutions, tools, and equipment.
- Encourage trainees to ask questions and clarify any Doubts they may have during the session.
- Highlight the significance of monitoring and verifying the cleaning process to ensure that it is effective and meets the required standards.

Unit 3.4: Disposal of Waste Materials

Unit Objectives

By the end of this unit, the Participants will be able to:

1. Describe how to dispose waste as per organisational standards.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Disposal of Waste Materials, Images and Videos on Disposal of Waste Materials.

Say

- Good morning participants, in this session, we will discuss Disposal of Waste Materials.
- Today, we will be learning about the importance of waste disposal, different types of waste, methods for treating and disposing of waste, and how to manage solid waste.
- Throughout the session, I encourage you to actively participate in discussions and activities, ask questions, and share your thoughts and experiences related to waste management.

Do

- Begin the session by asking the trainees three questions related to the topic to stimulate discussion and interest.
- Present the topics on Waste Disposal, Solid Waste, Sludge Treatment and Disposal, and Solid Waste Management using the presentation slides and handouts.
- Show videos or images of waste management practices, such as landfill construction, incineration, composting, and recycling.
- Wrap up the session by summarizing the key points covered and providing time for questions and further discussion.

Ask

- What are some common types of waste you generate at home or at work?
- What are the environmental impacts of improper waste disposal?
- How can we reduce waste generation and practice more sustainable waste management?

Elaborate

Why Waste Disposal? - Discuss the importance of proper waste disposal in preventing pollution, protecting public health, and conserving resources.

Solid Waste - Explain the different types of solid waste and their sources, such as municipal solid waste, industrial waste, and construction waste.

Sludge Treatment and Disposal - Describe the methods for treating sludge, such as composting, digestion, and thermal treatment, and the different disposal options available.

Solid Waste Management - Discuss the various approaches to managing solid waste, including waste reduction, reuse, recycling, and disposal.

Activity

Activity Name: Waste Sorting Game

Objective of the Activity: To identify different types of waste and understand how they should be disposed of properly

Resources: Samples of waste materials, bins for different types of waste (e.g. recycle, compost, landfill), handouts or worksheets

Time Duration: 30-45 minutes

Instructions:

- Divide the class into small groups of 4 people.
- Distribute the waste samples and the handouts or worksheets to each group.
- Explain that each group must sort the waste into the correct bin based on the type of waste (e.g. plastic, paper, organic).
- Encourage discussion within each group about why certain items belong in certain bins.
- After all groups have finished sorting, come together as a class and discuss any discrepancies or questions.
- Emphasize the importance of proper waste sorting and disposal.

Outcome: By the end of the activity, participants will have a better understanding of the different types of waste and how they should be disposed of properly.

Notes for Facilitation

- Encourage trainees to actively participate in discussions and share their experiences related to waste management.
- Be sensitive to cultural differences and local waste management practices.
- Emphasize the importance of safety and hygiene when handling waste.
- Provide opportunities for hands-on activities and group work.
- Reinforce the importance of waste reduction and recycling as key components of sustainable waste management.

Answers to Exercises for PHB

A. Answer the following questions by choosing the correct option:

- a. Non-food contact surface
- b. Non-food contact surface
- c. Food contact surface
- d. Non-food contact surface
- e. Non-food contact surface
- f. Non-food contact surface
- g. Non-food contact surface
- h. Non-food contact surface
- i. Food contact surface
- j. Food contact surface

B. Answer the following questions briefly.

- a. (ii) Hydrogen peroxide
- b. (i) to avoid bacterial growth
- c. (iv) Personal Protective Equipment
- d. (iv) sanitisation
- e. (i) CIP



4. Prepare for Execution of Fish and Sea Food Processing

Unit 4.1 - Types of Fish and Sea Food

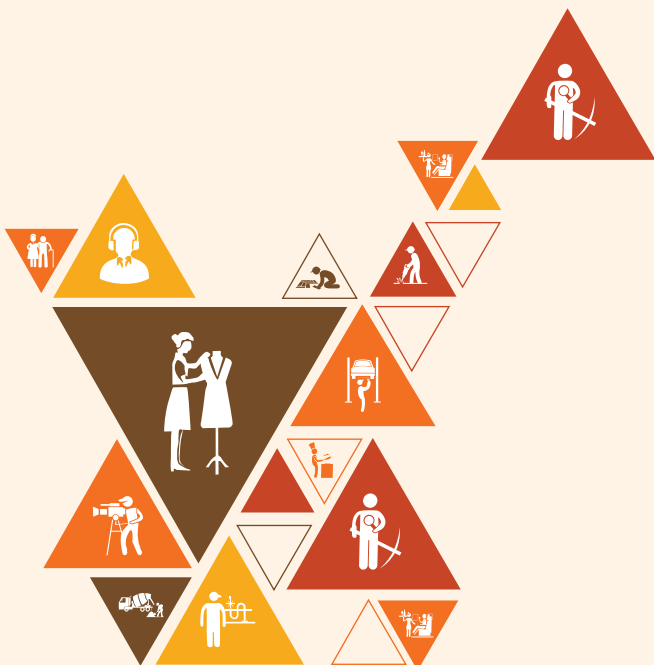
Unit 4.2 - Quality Parameters

Unit 4.3 - Basic Calculations

Unit 4.4 - Introduction to Food Microbiology, Food Spoilage and Food Preservation

Unit 4.5 - Food Safety Practices

Unit 4.6 - Plan Production Sequence



Key Learning Outcomes



By the end of this module, the participants will be able to:

1. List the different varieties of fish and sea food that are processed
2. State the quality parameters for raw materials to be processed
3. Describe the quality assessment methods based on the physical parameters
4. State the various units of measurement used in the food processing industry
5. Calculate the requirement of raw materials for desired quantity of finished product
6. Plan the production schedule as per organisational standards and instructions
7. Support in planning production sequence
8. Organise for raw material, packaging materials, manpower, equipment, and machineries for the scheduled production.

Unit 4.1: Types of Fish and Sea Food

Unit Objectives

By the end of this unit, the Participants will be able to:

1. List the different varieties of fish and sea food that are processed.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Types of Fish and Sea Food, Images and Videos on Types of Fish and Sea Food.

Say

- Good morning participants, in this session, we will discuss about different types of Fish and Sea Food.
- We will be discussing the physical and biological characteristics of freshwater fish, which will help us identify and understand the differences between various species.

Do

- Start by introducing yourself and giving an overview of the session.
- Show pictures and/or samples of different types of freshwater fish and discuss their physical characteristics.
- Discuss the different groups of freshwater species and their characteristics.
- Use the handout to provide additional information and have a group discussion about the topic.
- End the session with a summary of the key points covered.

Ask

- What are some common freshwater fish that you have tried or heard of?
- What physical characteristics distinguish one type of fish from another?

Elaborate

- Freshwater fish are those that live in freshwater bodies such as lakes, rivers, and ponds.
- There are different groups of freshwater fish, each with their own unique characteristics, such as cold-water fish, warm-water fish, and cool-water fish.
- Some common examples of freshwater fish include trout, salmon, catfish, and tilapia.

Demonstrate

- Demonstrate how to properly clean and prepare a freshwater fish for cooking. Show the different parts of the fish and explain how to remove bones and scales.

Activity

Activity Name: Fish Identification Game

Objective of the Activity: To improve the trainees' ability to identify different types of freshwater fish based on their physical characteristics.

Resources: Pictures of different types of freshwater fish, whiteboard and markers.

Time Duration: 20-30 minutes

Instructions:

- Divide the group into teams of 2-3 people.
- Show a picture of a freshwater fish and give the teams 30 seconds to identify the fish and write down its name on the whiteboard.
- After each round, discuss the characteristics of the fish and provide additional information as needed.
- The team with the most correct answers at the end of the game wins.

Outcome: Trainees will have improved their ability to identify different types of freshwater fish based on their physical characteristics.

Notes for Facilitation

- Ensure that all trainees have access to the necessary resources and materials for the Activity.
- Encourage trainees to ask questions and participate in discussions throughout the session.
- Provide clear and concise instructions for any activities or demonstrations.
- Be prepared to provide additional information and examples to help trainees understand the topic.
- Emphasize the importance of sustainable fishing practices and conservation efforts in the seafood industry.

Unit 4.2: Quality Parameters

Unit Objectives

By the end of this unit, the Participants will be able to:

1. State the quality parameters for raw materials to be processed
2. Describe the quality assessment methods based on the physical parameters.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Quality Parameters, Images and Videos on Quality Parameters.

Say

- Good morning trainees, in this session, we will learn about the different parameters that determine the quality of fresh fish and how to assess it.
- By the end of this session, you will be able to understand the importance of quality assessment in fish processing and handling.

Do

- Begin by introducing the importance of quality assessment in fish processing and handling.
- Discuss the different parameters that determine the quality of fresh fish such as appearance, texture, odor, and flavor.
- Explain the importance of each parameter in determining the quality of fresh fish.
- Demonstrate how to assess the quality of fresh fish by using the samples provided.
- Use visual aids such as charts, graphs, and pictures to support your explanation.

Ask

- What are the different parameters that determine the quality of fresh fish?
- Why is quality assessment important in fish processing and handling?
- How can you assess the quality of fresh fish?

Elaborate

- **Sensory evaluation:** This involves using our senses (smell, sight, touch, and taste) to assess the quality of fish. Fish should have a fresh, oceanic smell and clear eyes, and the flesh should be firm and free of slime or discoloration.
- **pH:** Fish that is not fresh will have an elevated pH level. Testing the pH level can help determine the freshness of the fish.
- **Temperature:** Fish should be stored and transported at a cool temperature (below 4°C) to maintain freshness. Elevated temperatures can cause bacterial growth and spoilage.
- **Texture:** Fresh fish should have a firm texture and should not feel slimy or mushy.
- **Appearance:** Fish should have a bright, clear appearance, and the scales should be intact.

Demonstrate

- Demonstrate how to assess the quality of fresh fish by using the samples provided. Show the trainees how to evaluate the appearance, texture, odor, and flavor of the fish.

Activity

Activity Name: Quality Assessment of Fresh Fish

Objective of the Activity: To assess the quality of fresh fish

Resources: Samples of fresh fish, evaluation sheet

Time Duration: 30 minutes

Instructions

- Divide the trainees into groups of two or three.
- Provide each group with a sample of fresh fish and an evaluation sheet.
- Instruct the groups to assess the quality of the fish based on appearance, texture, odor, and flavor and record their observations on the evaluation sheet.
- After 15 minutes, ask each group to present their observations to the class.
- Discuss the similarities and differences in the observations made by the different groups.

Outcome: The trainees will be able to assess the quality of fresh fish based on appearance, texture, odor, and flavor.

Notes for Facilitation

- Encourage active participation and discussion throughout the session.
- Use visual aids to support your explanation.
- Provide feedback to the trainees on their assessment of the quality of fresh fish during the Activity.
- Emphasize the importance of quality assessment in fish processing and handling.
- Remind the trainees to always follow the correct procedures for handling and storing fresh fish to maintain its quality.

Unit 4.3: Basic Calculations

Unit Objectives

By the end of this unit, the Participants will be able to:

1. State the various units of measurement used in the food processing industry
2. Calculate the requirement of raw materials for desired quantity of finished product.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Basic Calculations, Images and Videos on Basic Calculations.

Say

- Good morning trainees, today, we'll be learning about measuring units, temperature, and calculating the cost of raw materials.
- Calculations are an important part of many industries and are essential to success in any profession that requires mathematical skills.

Do

- Begin by introducing the topics, starting with measuring units, followed by temperature, and finally calculating the cost of raw materials.
- Give a brief lecture on each topic, using examples to help explain difficult concepts.
- Provide handouts with sample problems for participants to solve as a group or individually.
- Conduct an Activity to reinforce the concepts learned. Details for the Activity are given below.

Ask

- What are some examples of industries that require mathematical skills?
- How can basic calculations help improve your work?
- What are some challenges you've faced with calculations in the past?

Elaborate

- **Measuring units:** Understanding and using the correct measuring units is crucial in recipe development and ensuring consistency in product quality.
- **Temperature:** Proper temperature control is important for food safety and quality, as well as recipe accuracy.
- **Calculating cost of raw materials:** Accurately calculating the cost of raw materials is important for recipe costing and pricing decisions.

Activity

Activity Name: Cost of Raw Materials

Objective of the Activity: Participants will practice calculating the cost of raw materials based on weight, volume, and other factors.

Resources: Whiteboard, markers, handouts with sample problems, calculators.

Time Duration: 30-45 minutes.

Instructions:

- Divide participants into groups of three or four.
- Give each group a different scenario related to calculating the cost of raw materials. For example, one group could be given the task of calculating the cost of raw materials for a bakery, while another group could be given the task of calculating the cost of raw materials for a construction site.
- Each group should work together to solve the problem and present their solution to the class.
- Provide feedback and guidance as needed.

Outcome: Participants will learn how to apply the concepts they've learned in real-world scenarios and gain confidence in their ability to perform basic calculations.

Activity

Activity Name: Recipe Costing Exercise

Objective of the Activity: To practice calculating the cost of raw materials for a recipe

Resources: Worksheets with recipe and ingredient list, calculator

Time Duration: 20-30 minutes

Instructions:

- Divide trainees into pairs or small groups.
- Provide each group with a worksheet containing a recipe and list of ingredients with prices.
- Instruct each group to calculate the total cost of the recipe, factoring in waste and yield percentages as needed.
- Review the answers as a group and allow time for questions and clarification.

Outcome: Trainees will have practical experience calculating the cost of raw materials for a recipe, which they can apply to real-world situations.

Notes for Facilitation

- Encourage participation and questions from participants throughout the session.
- Keep the pace of the session steady to ensure everyone has enough time to understand and absorb the material.
- Remind participants to take notes and ask for clarification if needed.
- Use real-world examples and scenarios to help participants understand the relevance of the topics covered.
- Be prepared to answer questions about specific industries or job roles that participants may be interested in.

Unit 4.4: Introduction to Food Microbiology, Food Spoilage and Food Preservation

Unit Objectives

By the end of this unit, the Participants will be able to:

1. State the types of food microbes
2. State the causes for food spoilage
3. State the process for food spoilage
4. State the criteria to check food spoilage
5. State the need for food preservation
6. State the different types of food preservation processes.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Food Microbiology, Food Spoilage and Food Preservation, Images and Videos on Food Microbiology, Food Spoilage and Food Preservation.

Say

- Good morning trainees, today, we'll be learning about Introduction to Food Microbiology, Food Spoilage and Food Preservation.

Do

- Begin the session by discussing what food microbiology is and why it is important.
- Cover the different types of food contaminants and how they can cause spoilage and illness.
- Explain the different methods of food preservation and how they can be used to maintain the quality and safety of food.

Ask

- What is food microbiology and why is it important in the food industry?
- How can food contaminants cause spoilage and illness?
- What are some common methods of food preservation?

Elaborate

- Food microbiology refers to the study of microorganisms that can be present in food and can cause spoilage and illness.
- There are various types of food contaminants, including bacteria, viruses, molds, and parasites, which can cause spoilage and illness.
- Food preservation refers to the various methods used to maintain the quality and safety of food, including refrigeration, freezing, canning, and pasteurization.

Demonstrate

- Demonstration of how different preservation methods are applied to different types of food. For example, show how to can vegetables, freeze meat, or pasteurize milk.

Activity

Activity name: Food Preservation Experiment

Objective of the Activity: To understand the principles of food preservation and how they affect food safety and quality.

Resources: Various types of food (e.g., fruits, vegetables, meat, milk), Preservation materials (e.g., canning jars, freezer bags, vacuum sealer, etc.), Thermometer, Timer, etc.

Time Duration: 1-2 hours, depending on the number of preservation methods covered.

Instructions:

- Divide the trainees into small groups.
- Provide each group with a different type of food and a variety of preservation materials.
- Instruct the groups to choose a preservation method and preserve the food according to the instructions.
- Monitor the groups as they work and answer any questions they may have.
- Once the preservation is complete, use a thermometer to check the temperature of the preserved food, and discuss how this affects its safety and quality.
- Ask the groups to share their experience with the preservation method they used.

Outcome: Trainees will gain a hands-on understanding of how different preservation methods work and how they can affect the safety and quality of food.

Notes for Facilitation

- Encourage trainees to ask questions throughout the session.
- Ensure that the demonstration is clear and easy to understand.
- Emphasize the importance of food safety and quality.
- Remind trainees to take notes during the session.
- Provide guidance as needed during the Activity, and encourage trainees to share their experiences with each other.

Unit 4.5: Food Safety Practices

Unit Objectives

By the end of this unit, the Participants will be able to:

1. State the storage requirements for raw materials and finished products
2. Determine the quality of food and intake measures to prevent spoilage
3. Follow stock rotation based on FIFO/FEFO.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Food Safety Practices, Images and Videos on Food Safety Practices.

Say

- Good morning trainees, today, we will be discussing spoilage, handling and preparing seafood safely, specific guidelines for using seafood, and the stock rotation system.
- Food safety is important for everyone, whether you are cooking for yourself or for others. It is essential to know how to properly handle, store, and prepare food to prevent foodborne illnesses.

Do

- Begin by discussing spoilage, explaining how to identify spoiled food and how it can cause foodborne illnesses. Provide examples of food spoilage and discuss how it can be prevented.
- Move on to seafood safety guidelines, emphasizing the importance of proper handling, storage, and preparation of seafood to prevent foodborne illnesses. Demonstrate how to properly clean and prepare seafood.
- Next, discuss specific guidelines for using seafood, such as avoiding cross-contamination and cooking seafood to the appropriate temperature.
- End the session by discussing the stock rotation system and how it can help prevent food spoilage.

Ask

- What are some common signs of spoiled food?
- Why is it important to handle, store, and prepare seafood properly?
- How can the stock rotation system help prevent food spoilage?

Elaborate

- Spoilage is the process by which food deteriorates, resulting in changes in taste, smell, texture, and appearance. Spoiled food can cause foodborne illnesses, such as nausea, vomiting, and diarrhea.
- Seafood can be contaminated with harmful bacteria or viruses, so it is important to handle, store, and prepare it properly to prevent foodborne illnesses.
- Specific guidelines for using seafood include keeping it separate from other foods to prevent cross-contamination, and cooking it to the appropriate temperature to kill any harmful bacteria.
- The stock rotation system involves using the oldest food items first, to prevent food from going bad and to ensure that all items are used before their expiration date.

Demonstrate

- Demonstrate how to properly clean and prepare seafood, emphasizing the importance of using clean utensils and equipment to prevent cross-contamination.

Activity

Activity Name: Seafood Handling and Preparation

Objective: To practice proper seafood handling and preparation techniques

Resources: Raw seafood, kitchen equipment and utensils

Time Duration: 30-45 minutes

Instructions:

Divide the trainees into 4 groups.

- Provide each pair with a piece of raw seafood and a set of kitchen equipment and utensils.
- Instruct participants to properly clean and prepare the seafood, emphasizing the importance of using clean utensils and equipment to prevent cross-contamination.
- Observe participants and provide feedback on their techniques.

Outcome: Participants will practice proper seafood handling and preparation techniques.

Notes for Facilitation

- Always emphasize the importance of food safety in all aspects of food handling and preparation.
- Encourage participants to ask questions and provide feedback during the session.
- Demonstrate proper techniques and encourage participants to practice them during the session.
- Provide ample time for hands-on activities to allow participants to apply what they have learned.
- Emphasize the importance of properly storing food to prevent spoilage and foodborne illnesses.

Unit 4.6: Plan Production Sequence

Unit Objectives

By the end of this unit, the Participants will be able to:

1. Plan the production schedule as per organisational standards and instructions
2. Support in planning production sequence
3. Organise for raw material, packaging materials, manpower, equipment, and machineries for the scheduled production.

Resources to be Used

Participant handbook, Projector, Laptop/Computer with the internet, White Board, Flip Chart, Markers, PowerPoint presentation on Production Sequence, Images and Videos on Production Sequence.

Say

- Good morning trainees, today, we will be discussing production planning, which is the process of determining the materials, resources, and scheduling required to manufacture a product.
- We will be focusing on the production plan, which is a Document that outlines the production process, including the steps to be taken, resources needed, and timelines for completion.
- By the end of this session, you will have a good understanding of how to create a production plan for your own organization.

Do

- Introduce the concept of production planning and the purpose of the production plan.
- Explain the different elements of a production plan, including the product description, bill of materials, production schedule, and resource requirements.
- Provide examples of different production plans, such as a manufacturing plan, service plan, or project plan.
- Discuss the importance of reviewing and updating the production plan regularly.

Ask

- What are some benefits of having a production plan in place?
- Can you think of any potential challenges that might arise during the production planning process?
- How might you adjust your production plan in response to unexpected events or changes in demand?

Elaborate

- Production planning involves creating a detailed roadmap for the production process, including the resources, materials, and scheduling needed to complete the project successfully.
- The production plan should be regularly reviewed and updated to ensure it remains relevant and effective.
- A well-crafted production plan can help increase efficiency, reduce costs, and improve quality control.

Demonstrate

- Show examples of different production plans and discuss their strengths and weaknesses.

Activity

Activity Name: Production Plan Template Exercise

Objective of the Activity: To create a production plan template for a given product or service.

Resources: Handouts or printouts of production plan templates, pens or pencils.

Time Duration: 45 minutes.

Instructions:

- Divide the participants into small groups.
- Provide each group with a handout or printout of a production plan template and a pen or pencil.
- Instruct the groups to review the template and identify any areas that need to be customized or modified for their particular product or service.
- Encourage the groups to brainstorm and collaborate on filling in the relevant sections of the template.
- Once the groups have completed their production plan templates, ask them to present their plans to the rest of the class.

Outcome: Participants will have gained hands-on experience in creating a production plan template and can apply this knowledge to their own organizations.

Notes for Facilitation

- Encourage participation and discussion throughout the session.
- Be prepared to provide additional examples or explanations as needed.
- Emphasize the importance of regular review and updates to the production plan.
- Encourage participants to ask questions and seek clarification.
- Monitor the group Activity to ensure everyone is engaged and on track.

Answers to Exercises for PHB

A. Answer the following questions by choosing the correct option:

- a. Cephalopods iv. Cuttle Fish, Octopus, Squids
- b. Elasmobranchs v. Sharks, Skates, Rays
- c. Flatfishes i. Halibut, Flounders, Soles
- d. Clupeids ii. Wolf Herrings, Oil Sardine, Hilsa Shad, Anchovies
- e. Other Crustaceans iii. Crabs

B. Answer the following questions briefly.

- a. (ii) 00C
- b. (i) 1000C
- c. (iv) 1000C
- d. (ii) 370C
- e. (iii) 220C

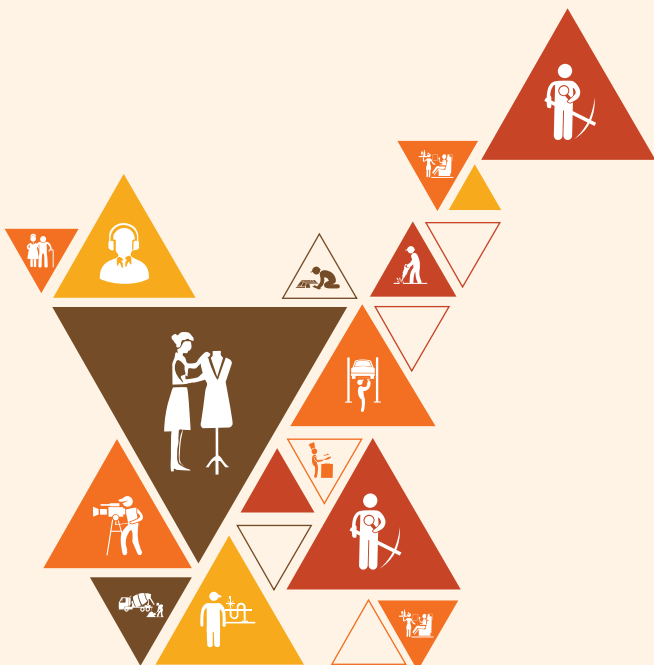


5. Execution of Fish and Sea Food Processing

Unit 5.1 - Handling Grading and Sorting of Raw Material

Unit 5.2 - Pre-Processing and Processing of Fish and Sea Food

Unit 5.3 - Methods of Fish and Sea Food Processing



Key Learning Outcomes



By the end of this module, the participants will be able to:

1. Describe the process of receiving and handling raw materials
2. State the process of grading and sorting varieties of fish and sea food
3. State the methods of pre-processing fish and sea food
4. Explain the different methods of fish and sea food processing
5. List the types and categories of packaging materials used for processed fish and sea food
6. State the laws and regulations related to product packaging and labelling
7. Describe the refrigeration and cold storage facility used for fish and sea food processing
8. Describe the storage conditions for all varieties of fish and sea food
9. State the storage procedures for raw materials and processed food
10. State the Documenting procedures for packaging and storing
11. Demonstrate the process of cleaning the work area and machineries after production.

Unit 5.1: Handling Grading and Sorting of Raw Material

Unit Objectives

By the end of this unit, the Participants will be able to:

1. Describe the process of receiving and handling raw materials
2. State the process of grading and sorting varieties of fish and sea food.

Resources to be Used

Whiteboard or flip chart, Markers, PowerPoint presentation, Handouts on the process of receiving and handling raw materials and grading and sorting varieties of fish and seafood, Samples of raw materials and seafood products, Knives, cutting boards, and scales for the Activity

Say

- Good morning participants. In today's session we will learn about handling grading and sorting of raw material.

Do

- Begin by introducing the topics and outlining the objectives of the session.
- Use the PowerPoint presentation to guide the session and highlight key points.
- Show samples of raw materials and seafood products to provide visual aids and help participants understand the concepts.
- Conduct the hands-on Activity to reinforce learning and allow participants to apply what they have learned in a practical setting.
- End the session with a review of key concepts and a summary of the Activity.

Ask

- What experience do you have with retail, specifically in handling raw materials and seafood products?
- What do you think are some important considerations when receiving and handling raw materials?
- What are some factors that affect the grading and sorting of fish and seafood products?

Elaborate



- The process of receiving and handling raw materials involves inspecting, measuring, and verifying the quality of the products. This includes checking the temperature, appearance, and smell of the products, as well as ensuring that they meet the required standards.
- Grading and sorting of fish and seafood products is a critical process that involves categorizing the products based on size, weight, quality, and other factors. This is important for ensuring that customers receive products that meet their expectations and for managing inventory levels.

Team Activity



Name of the Activity: Grading and Sorting Seafood

Objective: To understand the process of grading and sorting seafood products.

Resources: Samples of seafood products, knives, cutting boards, scales.

Time Duration: 30-45 minutes.

Instructions:

- Divide participants into groups of 2-3.
- Provide each group with a sample of seafood products.
- Ask each group to grade and sort the products based on size, weight, and quality.
- Allow participants to use the knives, cutting boards, and scales to complete the Activity.
- Encourage participants to discuss their process and rationale with their group members.
- After completing the Activity, ask each group to present their findings and explain their grading and sorting process.

Outcome: Participants will have a better understanding of the process of grading and sorting seafood products.

Notes for Facilitation



- Encourage participants to ask questions throughout the session.
- Provide examples and real-world scenarios to help participants understand the concepts.
- Emphasize the importance of safety when handling raw materials and seafood products.
- Use positive reinforcement to encourage participation and engagement.
- Follow up with participants after the session to address any questions or concerns they may have.

Unit 5.2: Pre-Processing and Processing of Fish and Sea Food

Unit Objectives

By the end of this unit, the Participants will be able to:

1. State the methods of pre-processing fish and sea food.
2. Explain the methods of processing fish and sea food.

Resources to be Used

Participant handbook, Presentation slides, Whiteboard and markers, Handouts on good practices in handling fish and seafood, Visual aids such as pictures and videos

Say

- Good morning/afternoon, everyone. Welcome to this session on Pre-Processing and Processing of Fish and Sea Food.
- In this session, we will learn about the methods used for pre-processing and processing fish and seafood, as well as good practices for handling them.
- By the end of this session, you will have a good understanding of the different techniques involved in preparing fish and seafood for retail sale.

Ask

- What are some common methods used for pre-processing fish and seafood?
- How do you ensure the quality of fish and seafood during the processing stage?
- What are some challenges that retailers face when handling fish and seafood?

Do

- Begin the session by asking the questions listed in the “Ask” section to stimulate the trainees’ interest in the topic.
- Use the presentation slides and visual aids to explain the methods of pre-processing and processing fish and seafood.
- Provide handouts on good practices for handling fish and seafood, and discuss these with the trainees.
- Use practical demonstrations to show how to properly handle and process fish and seafood.
- End the session with an Activity that allows the trainees to practice the skills they learned during the session.

Elaborate

- Methods of pre-processing fish and seafood include scaling, gutting, cleaning, and filleting.
- Methods of processing fish and seafood include salting, smoking, curing, and canning.
- Good practices for handling fish and seafood include keeping them at the right temperature, avoiding cross-contamination, and using gloves and other protective equipment.

Demonstrate

- Demonstrate the proper techniques for scaling, gutting, cleaning, and filleting fish, as well as salting, smoking, curing, and canning fish and seafood.

Activity

Name of the Activity: Fish Filleting and Processing

Objective: To practice the skills learned during the session for pre-processing and processing fish and seafood.

Resources: Fish, knives, cutting boards, salt, curing equipment, and smoking equipment.

Time Duration: 1 hour

Instructions:

- Divide the trainees into small groups.
- Provide each group with a fish, knife, cutting board, and instructions for filleting the fish.
- Instruct the groups to prepare the fish for salting, curing, or smoking.
- Monitor the groups and provide guidance as needed.
- Once the fish has been prepared, allow each group to salt, cure, or smoke the fish according to the instructions provided.

Outcome: Trainees will have practiced and demonstrated their understanding of the skills and techniques learned during the session.

Notes for Facilitation

- Emphasize the importance of proper handling techniques to prevent foodborne illness.
- Encourage trainees to ask questions and participate in discussions to deepen their understanding of the topics covered.
- Monitor the practical demonstrations and activities to ensure that trainees are following proper safety protocols.
- Ensure that all trainees have access to the necessary equipment and resources during the practical demonstrations and activities.
- Provide feedback and guidance to the trainees to help them improve their skills and techniques.

Unit 5.3: Methods of Fish and Sea Food Processing

Unit Objectives

By the end of this unit, the Participants will be able to:

1. Explain the different methods of fish and sea food processing.

Resources to be Used

Participant handbook, Whiteboard and markers, Printed materials on different methods of fish and seafood processing, Samples of processed fish and seafood (if possible)

Say

- Welcome to our session on methods of fish and seafood processing.
- In this session, we will discuss different methods of processing fish and seafood to make them suitable for various markets and consumer preferences.
- We will look at the different types of processing, the benefits of each method, and how it impacts the quality of the final product.
- We will also discuss the factors that determine the method of processing and how to select the appropriate method based on the raw material specifications.

Do

- Introduce yourself and your role as a facilitator.
- Start by asking the participants about their current knowledge of fish and seafood processing methods.
- Use the whiteboard and markers to write down their responses and to map out the key topics that will be covered in the session.
- Provide an overview of the session objectives and the structure of the session.

Ask

- What are some of the processing methods you are familiar with?
- What are the benefits of processing fish and seafood?
- How do different processing methods affect the quality of the final product?

Elaborate

- Introduce the different types of processing methods, such as canning, smoking, salting, drying and fermentation.
- Explain the benefits of each method, such as preserving the fish and seafood, extending the shelf life, enhancing the flavor, and improving the appearance.
- Discuss the factors that determine the method of processing, such as the type of fish and seafood, the intended market, the consumer preferences, and the available technology.
- Highlight the importance of selecting the appropriate method based on the raw material specifications, such as the freshness, size, and texture.

Demonstrate

- Show samples of processed fish and seafood and explain the method of processing used for each one. If possible, provide a practical demonstration of a processing method, such as smoking or canning.

Activity

Name of the Activity: Fish Processing Simulation

Objective of the Activity: To simulate the fish processing methods discussed in the session and to highlight the impact of each method on the quality of the final product.

Resources: Raw fish, cutting board, knives, salt, smoking apparatus (if available)

Time Duration: 30-45 minutes

Instructions:

- Divide the participants into groups of 3-4.
- Provide each group with a raw fish and the necessary equipment.
- Instruct each group to choose a different processing method to apply to their fish, such as salting, drying, smoking, or canning.
- Ask each group to Document the process they followed and the time taken for each step.
- After the processing is complete, ask each group to present their final product and to explain the impact of the processing method on the quality of the fish.

Outcome: Participants will have a hands-on experience of the different processing methods and a better understanding of the impact of each method on the quality of the final product.

Notes for Facilitation

- Encourage participation and interaction among the participants.
- Monitor the progress of the Activity and provide guidance as necessary.
- Ensure that the discussion stays focused on the topics covered in the session.
- Use examples and case studies to illustrate the different processing methods and their impact on the final product.
- Summarize the key points covered in the session and provide an opportunity for questions and feedback.

Answers to Exercises for PHB

1. MCQ

- a. (i) between 00C and +240C
- b. (iii) Preservation
- c. (ii) Break Down maintenance

2. The correct order is:

- I. Keep tools and equipment in designated area
- II. Remove waste and dispose appropriately
- III. Clean and maintain machines, tools
- IV. Clean using cleaning agents and sanitisers
- V. Adjust and reset controls for next batch
- VI. Ensure work area is clean
- VII. Maintain equipment as per organisational procedures

Key Learning Outcomes



By the end of this module, the participants will be able to:

1. Describe the process of receiving and handling raw materials
2. State the process of grading and sorting varieties of fish and sea food
3. State the methods of pre-processing fish and sea food
4. Explain the different methods of fish and sea food processing
5. List the types and categories of packaging materials used for processed fish and sea food
6. State the laws and regulations related to product packaging and labelling
7. Describe the refrigeration and cold storage facility used for fish and sea food processing
8. Describe the storage conditions for all varieties of fish and sea food
9. State the storage procedures for raw materials and processed food
10. State the Documenting procedures for packaging and storing
11. Demonstrate the process of cleaning the work area and machineries after production.

Unit 6.1: Packaging

Unit Objectives

By the end of this unit, the Participants will be able to:

1. List the types and categories of packaging materials used for processed fish and sea food
2. State the laws and regulations related to product packaging and labelling.

Resources to be Used

Participant handbook, Whiteboard or flip chart, Markers, Printed copies of relevant laws and regulations related to product packaging and labeling, Samples of primary, secondary and tertiary packaging used for processed fish and seafood, Video demonstration of packaging process

Say

- Welcome the trainees to the session on packaging methods used for processed fish and seafood.
- Introduce the topic by explaining the importance of packaging in preserving the quality and freshness of fish and seafood products.
- Explain that the session will cover the different types of packaging used in the industry, as well as relevant laws and regulations.
- Encourage trainees to ask questions and participate in the session.

Do

- Ask trainees to list down different types of packaging used for fish and seafood products.
- Introduce and explain the concept of packaging, including the types of materials used and the factors to consider when selecting packaging.
- Discuss the different types of packaging used in the industry, including primary, secondary and tertiary packaging. Show examples of each type and explain their purpose.
- Review relevant laws and regulations related to product packaging and labeling, and discuss their importance in ensuring the safety and quality of products.
- Conduct a practical demonstration of the packaging process, highlighting best practices and common mistakes to avoid.

Ask

- What are some factors to consider when selecting packaging for fish and seafood products?
- What is the difference between primary, secondary, and tertiary packaging?
- Why it is important to comply with laws and regulations related to product packaging and labeling?

Elaborate

- Define packaging and explain the importance of packaging in preserving the quality and freshness of fish and seafood products.
- Discuss the different types of packaging used in the industry:
 - Primary packaging refers to the packaging that directly contacts the product (e.g. vacuum-sealed bags, cans, etc.).
 - Secondary packaging refers to the packaging that holds primary packages together (e.g. cartons, boxes, etc.).
 - Tertiary packaging refers to the outermost packaging used for transportation and storage (e.g. pallets, thermoformed boxes/cartons, stretch wrap, etc.).
- Review relevant laws and regulations related to product packaging and labeling, including those related to food safety, weights and measures, and country of origin labeling.

Demonstrate

- Conduct a practical demonstration of the packaging process, including the use of different types of packaging materials and equipment.

Activity

Name of the Activity: Packaging Design Challenge

Objective of the Activity: To reinforce understanding of packaging concepts and to encourage creativity and problem-solving skills

Resources: Assorted packaging materials (e.g. plastic bags, foil, paper), scissors, tape

Time duration: 30 minutes

Instructions:

- Divide trainees into small groups.
- Provide each group with a set of packaging materials.
- Instruct the groups to design and create a new packaging solution for a specific fish or seafood product, considering factors such as product size, weight, and transport conditions.
- Encourage groups to be creative and think outside the box.
- After the allotted time, have each group present their design and explain their thought process.

Outcome: Trainees will have a deeper understanding of packaging concepts and have had the opportunity to practice their problem-solving and creativity skills.

Notes for Facilitation

- Be aware of cultural and dietary preferences when selecting fish and seafood products for the session.
- Make sure to review relevant laws and regulations related to packaging and labeling prior to the session.
- Emphasize the importance of food safety and quality throughout the session.
- Encourage trainees to share their own experiences and best practices related to packaging methods.
- Allow ample time for questions and discussion throughout the session.

Unit 6.2: Refrigeration and Cold Storage Facility

Unit Objectives

By the end of this unit, the Participants will be able to:

1. Describe the refrigeration and cold storage facility used for fish and sea food processing
2. Describe the storage conditions for all varieties of fish and sea food
3. State the storage procedures for raw materials and processed food
4. State the Documenting procedures for packaging and storing.

Resources to be Used

Participant handbook, Presentation slides on refrigeration and cold storage facilities, storage conditions, storage procedures, and Documenting procedures, Samples of different types of fish and sea food products, Containers and storage equipment for demonstration purposes, Handouts with key points and takeaways, Whiteboard and markers

Say

- Today we will learn about the different methods of refrigeration and cold storage used in fish and sea food processing, as well as the storage conditions and procedures for both raw materials and processed food products.
- We will also cover the Documenting procedures necessary for packaging and storing these products.
- By the end of this session, you will have a comprehensive understanding of the best practices for storing and Documenting fish and sea food products.

Do

- Introduce the topic and objectives of the session.
- Present the information using the slides and samples provided.
- Demonstrate the storage procedures and Documenting procedures.
- Conduct an Activity to reinforce the key takeaways from the session.
- Summarize the key points and encourage questions from the trainees.

Ask

- What are the challenges faced when storing and processing fish and sea food products?
- Why is it important to follow proper storage procedures and Document them accurately?
- How do different varieties of fish and sea food products require different storage conditions and procedures?

Elaborate

- Refrigeration and cold storage facilities play a crucial role in maintaining the quality and freshness of fish and seafood products. These facilities help to slow down bacterial growth, prevent spoilage and maintain the quality and freshness of the products.
- Different types of fish and seafood require different storage conditions to maintain their quality. Generally, a temperature range of 0°C to 4°C is suitable for most fish and seafood products. However, certain products may require specific temperatures, humidity and lighting conditions. For example, live seafood such as lobsters and crabs require cool, moist conditions with adequate oxygen supply, while smoked and dried seafood require cool, dry conditions.
- Proper storage procedures are necessary for both raw materials and processed food products. Raw materials should be cleaned thoroughly before storage to prevent bacterial growth, and then packaged and labeled properly for easy identification. Processed food products should also be cleaned, packaged and labeled according to their specific requirements. Packaging should be airtight to prevent spoilage and contamination.
- Accurate Documentation is important for packaging and storing products. This includes information on the date of production, best-before date, storage conditions, and any other relevant information such as ingredients, allergens and batch numbers. This information helps to ensure that products are stored correctly and can be easily traced in case of any issues or recalls. Proper Documentation also helps to ensure that products are stored for an appropriate length of time and are consumed before their expiry date.

Demonstrate

- Demonstrate the proper storage procedures for raw materials and processed food products, using containers and storage equipment as examples.
- Show the trainees how to properly package and label fish and sea food products for storage.
- Demonstrate how to accurately Document the packaging and storing of these products.

Activity

Name of the Activity: Fish and Sea Food Storage Challenge

Objective of the Activity: To reinforce the key takeaways from the session by challenging trainees to apply their knowledge of fish and sea food storage procedures.

Resources: Different types of fish and sea food products, containers and storage equipment, timer, handouts with instructions.

Time duration: 30 minutes

Instructions:

- Divide the trainees into small groups.
- Provide each group with a different type of fish or sea food product, as well as containers and storage equipment.
- Instruct each group to properly store the product according to the storage conditions and procedures discussed in the session.
- Set a timer for 15 minutes.

- After 15 minutes, have each group present their storage method and explain why they chose that method.
- Use the handouts to guide a discussion of the key takeaways from the Activity.

Outcome: The trainees will have a better understanding of how to properly store fish and sea food products, as well as the importance of accurate Documentation and the challenges faced when processing and storing these products.

Notes for Facilitation

- Be aware of any trainees with allergies or dietary restrictions when selecting fish and sea food products for the Activity.
- Encourage active participation and engagement from all trainees.
- Use real-life examples and case studies to make the session more relevant and practical.
- Emphasize the importance of proper hygiene and food safety when processing and storing fish and sea food products.
- Use the whiteboard to highlight key points and takeaways throughout the session

Unit 6.3: Post Production Cleaning and Maintenance

Unit Objectives

By the end of this unit, the Participants will be able to:

1. Demonstrate the process of cleaning the work area and machineries after production.

Resources to be Used

Participant handbook, cleaning supplies (e.g. soap, water, disinfectant, broom, mop, etc.), Machinery maintenance guide or manual, Safety equipment (e.g. gloves, goggles, masks, etc.) whiteboard, markers, etc.

Say

- Welcome everyone and thank them for attending the session.
- Today, we will be discussing the importance of post-production cleaning and maintenance.
- This session will cover the processes and techniques involved in cleaning the work area and machineries after production, and the various types of maintenance required to keep them functioning properly.

Do

- Begin by explaining the importance of post-production cleaning and maintenance and how it contributes to a safe and healthy work environment.
- Demonstrate the proper cleaning techniques and procedures for the work area and machineries after production.
- Discuss the various types of maintenance (preventive, predictive, and corrective) and their purposes, as well as how to identify when maintenance is needed.
- Provide a hands-on Activity for participants to practice the cleaning and maintenance procedures demonstrated.
- Conclude the session with a review of key points and a question and answer session.

Ask

- Why is post-production cleaning and maintenance important?
- What are some potential consequences of not properly cleaning and maintaining the work area and machineries?
- What are the different types of maintenance and when are they typically used?

Elaborate

- Post-production cleaning and maintenance are critical in ensuring the safety and quality of the products produced, as well as the health of the workers. Failure to clean and maintain properly can result in contamination, malfunctions, and potential hazards.
- Cleaning the work area involves removing any debris or leftover materials, sanitizing surfaces, and disposing of waste properly. Machinery cleaning involves following manufacturer's instructions and using appropriate cleaning methods and equipment.
- Maintenance is the act of keeping equipment in good working condition to prevent breakdowns and maintain productivity.
- The maintenance process of machineries can be classified as:
 - Routine maintenance
 - Periodic maintenance
 - Breakdown maintenance

Demonstrate

- Demonstrate the proper process for cleaning the work area and machinery after production, including how to dispose of waste and cleaning materials, and how to sanitize surfaces and equipment.
- Demonstrate the process for inspecting and maintaining machinery and equipment, including lubrication and calibration.

Activity

Name of the Activity: Post-Production Cleaning and Maintenance

Objective: To reinforce the importance of post-production cleaning and maintenance and allow participants to practice proper cleaning and maintenance techniques.

Resources: Cleaning materials, personal protective equipment, machinery and equipment manuals, PowerPoint presentation

Time Duration: 45 minutes

Instructions:

- Divide participants into small groups.
- Provide each group with a work area and machinery or equipment to clean and maintain.
- Instruct participants to follow the proper cleaning and maintenance procedures demonstrated in the class.
- After cleaning and maintenance is complete, ask participants to present their work to the rest of the group and explain the procedures they followed.

Outcome: Participants will gain hands-on experience in proper post-production cleaning and maintenance techniques and will understand the importance of these practices in ensuring a safe and efficient work environment.

Notes for Facilitation



- Encourage participants to ask questions and provide examples of maintenance issues they have experienced.
- Emphasize the importance of following proper cleaning and maintenance procedures to prevent breakdowns and ensure a safe work environment.
- Provide additional resources or training opportunities for participants who need further support in maintaining equipment.
- Ensure that all participants are wearing appropriate personal protective equipment during the Activity.

Answers to Exercises for PHB

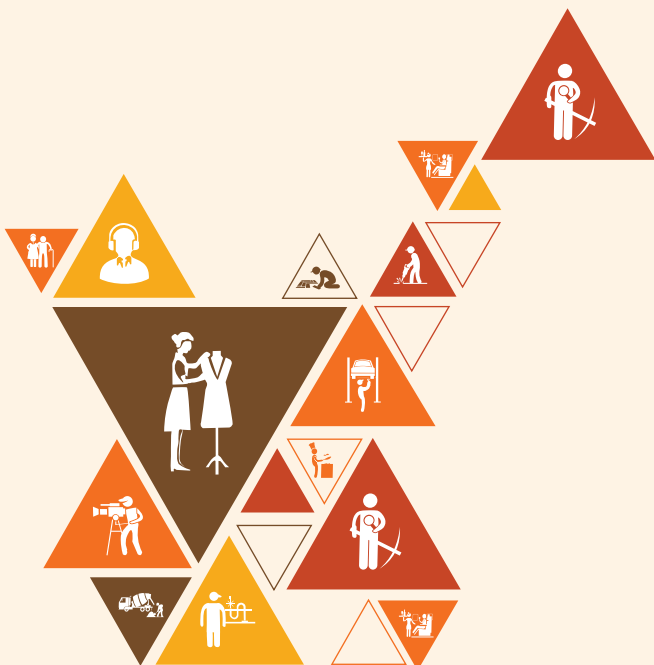
1. MCQ

- a. (ii) 00C
- b. (iii) 00C
- c. (ii) Routine maintenance



7. Complete Documentation and Record Keeping Related to Processing of Fish and Sea Food

Unit 7.1 - Documentation and Record Keeping



FIC/N4004

Key Learning Outcomes



By the end of this module, the participants will be able to:

1. State the need for Documenting and maintaining records of raw materials, process, and finished products
2. State the method of Documenting and recording the details of raw material to final finished product

Unit 7.1: Documentation and Record Keeping

Unit Objectives

By the end of this unit, the Participants will be able to:

1. State the need for Documenting and maintaining records of raw materials, process, and finished products
2. State the method of Documenting and recording the details of raw material to final finished product.

Resources to be Used

Participant handbook, Presentation slides, Handouts, Sample Documents (e.g. raw material log, production log, and finished product log), whiteboard, markers, notepad, pens, laptop/computer with internet connection.

Say

- In this session, we will be discussing the importance of Documentation and record keeping in the food industry.
- We will be learning about the different types of records that need to be maintained, and the methods used to Document these records.
- By the end of this session, you will understand the significance of proper Documentation and record keeping in ensuring food safety and quality.

Do

- Begin by introducing the topic and asking participants why they think Documentation and record keeping is important.
- Present the information on the importance of Documenting and maintaining records of raw materials, process, and finished products, and the methods of documenting these records.
- Provide examples of different types of Documents used in food production (e.g. raw material log, production log, finished product log).
- Conduct a practical demonstration on how to Document and record the details of raw material to final finished product.
- Have the participants complete an Activity related to Documentation and record keeping.

Ask

- Why is Documentation and record keeping important in the food industry?
- What types of records need to be maintained in food production?
- How can inadequate record keeping affect food safety and quality?

Elaborate

- Documentation and record keeping are critical aspects of food production. They allow for traceability, quality control, and regulatory compliance.
- Different types of records need to be maintained, including records of raw materials, production process, and finished products.
- Methods of Documenting records can include logs, checklists, and forms. These records need to be accurate and up-to-date.
- Maintaining records helps to identify any issues that arise during production, and can help to prevent similar issues from occurring in the future.
- Inadequate record keeping can lead to food safety and quality issues, as well as regulatory non-compliance.

Demonstrate

- Demonstrate how to properly Document and record information related to raw materials, such as the supplier, date of receipt, quantity, and quality.
- Demonstrate how to Document and record the process involved in fish and seafood processing, such as cleaning, packaging, and storing.
- Show examples of templates or formats that can be used for Documenting and record keeping.

Activity

Activity Name: Record Keeping Practice

Objective of the Activity: To practice Documenting and record keeping using sample records and templates

Resources: Sample records and templates, pens, and papers

Time Duration: 30-45 minutes

Instructions:

- Divide the participants into small groups.
- Distribute sample records and templates.
- Instruct each group to fill out the records and templates based on the given scenario.
- Ask the groups to discuss and share their completed records and templates.
- Facilitate a discussion on the importance of accurate record keeping and the challenges that may arise in maintaining records.

Outcome: Participants will have practiced Documenting and record keeping using sample records and templates and will have a better understanding of the importance of accurate record keeping.

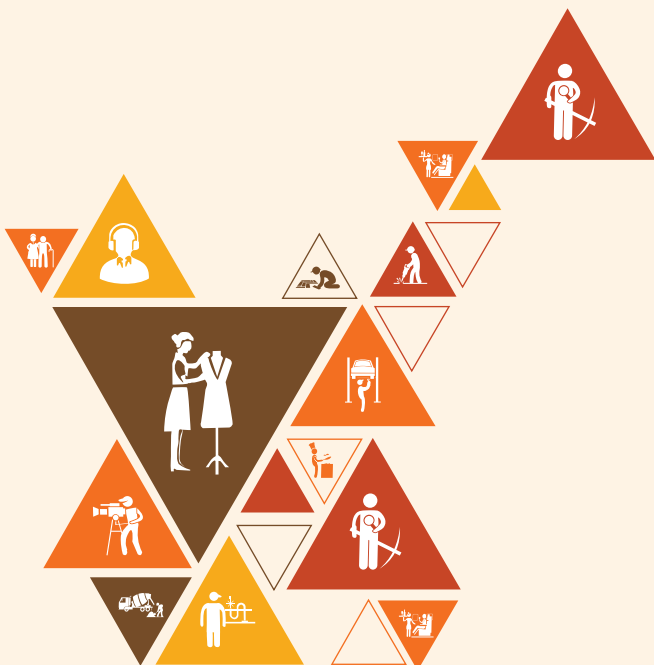
Notes for Facilitation



- Emphasize the importance of accuracy in record keeping.
- Encourage participants to ask questions and seek clarification.
- Provide feedback and suggestions for improvement on the completed records and templates.
- Relate the importance of record keeping to real-life situations or case studies.
- Highlight the consequences of inaccurate record keeping and the impact it can have on the business and its customers.



8. Employability Skills



Scan the QR codes or click on the link to watch the related videos



<https://www.skillindiadigital.gov.in/content/list>

Employability Skills

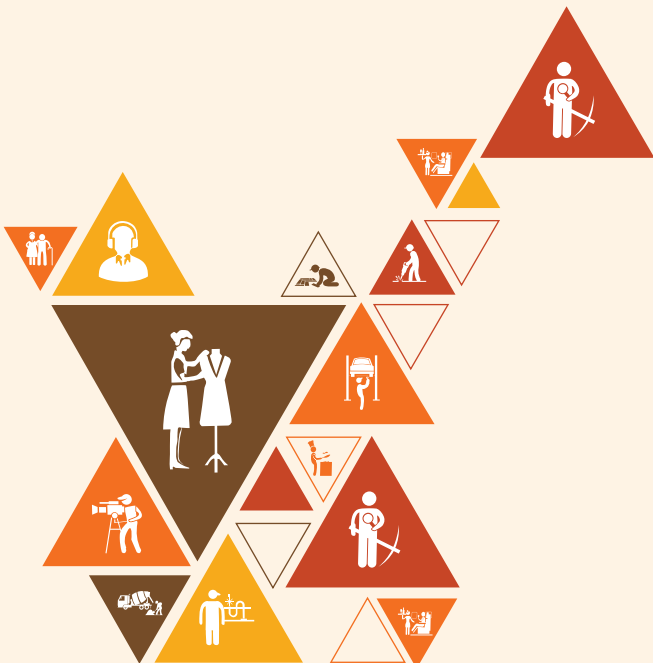


9. Annexures

Annexure I: Training Delivery Plan

Annexure II: Assessment Criteria

Annexure III: List of QR Codes Used in PHB



Annexure I

Training Delivery Plan

Training Delivery Plan			
Program Name:	Fish and Sea Food Processing Technician		
Qualification Pack Name & Ref. ID	Fish and Sea Food Processing Technician, FIC/ Q4001		
Version No.	3.0	Version Update Date	29-07-2021
Pre-requisites to Training (if any)	Not Applicable		
Training Outcomes	<p>By the end of this program, the participants will be able to:</p> <ol style="list-style-type: none"> 1. Process all types of fish and seafood manually or mechanically to achieve the desired quality as set by the organisation. 2. Operate the machinery/equipment for processing fish and seafood. 3. Plan, organise, and prioritise production as per schedule. 4. Follow and maintain food safety and hygiene in the work environment. 		

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
1	Introduction to the training program and overview of food processing industry	Understanding the Food Processing Industry and the Role of a Fish and Sea Food Technician	<ul style="list-style-type: none"> • Introduce each other and build rapport with fellow participants and the trainer. • Define food processing. • List various sub-sectors of the 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. 	FIC/N4001, V1.0	Classroom lecture / PowerPoint Presentation / Question & Answer / Group Discussion	White/ Blackboard/ Chart paper, Markers/ computer and projector	2 Theory (4:00) Practical (0:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
			<ul style="list-style-type: none"> Discuss the roles and responsibilities of the individual. Describe how to conduct yourself at the workplace 				
2	Professional Skills	Professional Skills Part - 1	<ul style="list-style-type: none"> Apply standard practice to undertake a self-assessment test for identifying strengths and weaknesses. Discuss the importance of work order in the process. State the importance of decision making in the job. State the importance of communicating effectively. 	FIC/N4001, v1.0	Classroom lecture / PowerPoint Presentation / Question & Answer / Group Discussion	Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook, Gloves, hair net, shoe cover, soap dispenser, hand sanitiser, ear plugs, masks, aprons/lab coats, eye protection, hard hats, gloves, rubber boots, etc.	5 Theory (2:00) Practical (03:00)
		Professional Skills Part - 2	<ul style="list-style-type: none"> Plan and prioritise tasks effectively to ensure timely completion. Demonstrate how to analyse situations to identify problems and promptly making sound decisions. 	FIC/N4001, v1.0			5 Theory (2:00) Practical (03:00)
3	Prepare work area and equipment for fish and sea food processing	Prepare and maintain the work area for processing fish and seafood Part – 1	<ul style="list-style-type: none"> Explain the cleaning processes used to clean the work area. List the materials and equipment used to clean and maintain the work area and machinery. 	FIC/N4001, V1.0 PC1, KU8, KU9, KU10	Classroom lecture / PowerPoint Presentation / Question & Answer / Group Discussion	Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook, Filtering machine, Scaling machine, Shelling machine,	8 Theory (4:00) Practical (4:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
		Prepare and maintain the work area for processing fish and seafood Part – 2	<ul style="list-style-type: none"> Demonstrate how to clean and maintain the cleanliness of the work area using approved sanitisers and techniques to keep it free from dust, waste, flies, and pests. 	FIC/N4001, V1.0 PC1, KU8, KU9, KU10		Slitting machine, Grounding machine, Opening machine, Thermoforms, Moulders, Heat sealers, Can making equipment, Can closers/sealers,	8 Theory (4:00) Practical (4:00)
		Prepare and maintain the work area for processing fish and seafood Part – 3	<ul style="list-style-type: none"> Explain the importance of maintaining a safe and hygienic work area for food processing, including identifying potential hazards and implementing appropriate preventive measures. 	FIC/N4001, V1.0 PC2, KU12		Seam testers, Fillers of all type, Cutting/slitting/trimming equipment, Typing/sieving/ stapling equipment, Closing/sealing equip,	8 Theory (4:00) Practical (4:00)
		Waste Disposal	<ul style="list-style-type: none"> Follow defined standard operating procedures (SOPs) and industry requirements to dispose of waste materials safely and efficiently. 	FIC/N4001, V1.0 PC3		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,	8 Theory (4:00) Practical (4:00)
		Machinery and Tools in Fish and Seafood Processing	<ul style="list-style-type: none"> Identify the various types of machinery and tools used in the fish and seafood processing industry, including deheading machines, gutting machines, fillet machines, pin bone pullers, deboning machines, skinning machines, vacuum packers, freezing equipment, and packaging machines. 	FIC/N4001, V1.0 PC4			8 Theory (4:00) Practical (4:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
		Equipment Usage	<ul style="list-style-type: none"> Demonstrate the use of different equipment used in fish and seafood processing. 	FIC/N4001, V1.0 PC4		Code/ lable inspecting equipment, Palletis-ers, Bottle spotters, Aligners, Container cleaning/ washing/ drying systems, Ac-cumulator/ collectors	8 Theory (4:00) Practical (4:00)
		Performance Checking	<ul style="list-style-type: none"> Demonstrate knowledge and skills in checking the working and performance of all the machinery and tools. 	FIC/N4001, V1.0 PC4			7 Theory (2:00) Practical (5:00)
		Cleaning Machines and Tools	<ul style="list-style-type: none"> Apply appropriate cleaning procedures for cleaning the machinery and tools using approved sanitisers in accordance with the company specifications and standard operating procedures. 	FIC/N4001, V1.0 PC5, KU9			8 Theory (4:00) Practical (4:00)
		Tool Organisation and Optimisation in Fish and Seafood Processing	<ul style="list-style-type: none"> Organise and place the necessary tools required to process fish and seafood products. 	FIC/N4001, V1.0 PC6, KU9			8 Theory (4:00) Practical (4:00)
		Maintenance and Repair of Machinery and Tools	<ul style="list-style-type: none"> Display the procedure to rectify faults and minor repairs in process machinery. Show how to maintain the tools and machines utilised for production. 	FIC/N4001, V1.0 PC7, KU11			8 Theory (4:00) Practical (4:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
4	Prepare for execution of fish and sea food processing	Provide support in planning for production for the execution of fish and seafood processing	<ul style="list-style-type: none"> Recall the steps involved in planning the production sequence of fish and seafood products. Summarise the planning process for the production sequence, including grouping raw materials, selecting suitable raw materials, avoiding cross-contamination, and planning maximum capacity utilisation Analyse the production capacity of machinery and prioritise urgent orders for efficient utilisation of resources/ manpower Evaluate the batch size calculation based on the production order and machine capacity Analyse the raw material requirement (considering process loss) to obtain the required quantity of finished product(s) Show how to calculate the raw materials (including ingredients, if any), packaging materials and manpower requirements for completing the order 	FIC/N4002, v1.0 PC1, PC2, PC3, PC4, PC5, PC6, KU13, KU14, KU15	Classroom lecture / PowerPoint Presentation / Question & Answer / Group Discussion	Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook, 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/ stapling equipment, Closing/sealing equip, Form/fill/ seal equip, Cappers/ crumpers / hooders, Wrappers, Cartoners, Multipackers, Bundlers, Shrink wrappers and tunnels, Labellers,	7 Theory (2:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
		Plan equipment utilisation for the execution of fish and seafood processing	<ul style="list-style-type: none"> Evaluate the working and performance of equipment used in the process to ensure efficient production. Calculate the processing time required for each equipment to maximise their utilisation and productivity. Develop a production plan that considers full capacity utilisation of machinery and determines the batch size required for each product. Create a plan to optimise production and save energy by utilising machinery for multiple products without compromising on the quality of the finished products. Assign tasks and responsibilities to assistants and helpers to ensure the smooth functioning of the production process. 	FIC/N4002, v1.0 PC7, PC8, PC9, PC10, PC11, KU10, KU12		Coding equipment, weighing scale, Metal detection equipment, Level checking equipment, Code/label inspecting equipment, Palletisers, Bottle spotters, Aligners, Container cleaning/washing/drying systems, Accumulator/collectors, refrigerator	7 Theory (2:00) Practical (5:00)
		Analysis, Weighing, and Quality Evaluation of Raw Materials	<ul style="list-style-type: none"> Analyse the process chart for raw material to be processed Demonstrate weighing of the raw materials required for order. 	FIC/N4002, v1.0 PC12, PC13, PC14			6 Theory (1:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
			<ul style="list-style-type: none"> Evaluate the quality of the raw materials by conducting physical analysis and comparing results to the organisation's quality standards, quality analysis reports from suppliers or internal lab reports. 				
		Organise and check equipment for execution of fish and seafood processing	<ul style="list-style-type: none"> Verify the working and performance of the machinery and tools necessary for processing the raw materials. Arrange the tools and equipment in an accessible location to attend to repairs/ faults in case of breakdown. Assess the condition and space availability of the cold storage room to ensure appropriate storage of the raw materials Regulate and monitor the temperature of the cold storage area as per the requirements to ensure proper storage of the raw materials. 	FIC/N4002, v1.0 PC15, PC16, PC17, PC18			6 Theory (1:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
5	Food Microbiology	Understanding Food Microbes, Spoilage, and Preservation Techniques	<ul style="list-style-type: none"> List the types of food microbes. Explain the causes of food spoilage. Describe the process for food spoilage. Explain the criteria for checking food spoilage. Discuss the need for food preservation. Discuss different types of food preservation processes 	FIC/N4002, v1.0 KU16	Classroom lecture / PowerPoint Presentation / Question & Answer / Group Discussion	White/ Blackboard/ Chart paper, Markers/ computer and projector, trainer's guide, student handbook	4 Theory (4:00) Practical (0:00)
6	Execution of fish and sea food processing	Best Practices for Receiving and Handling Raw Materials	<ul style="list-style-type: none"> Describe the process of receiving and handling raw materials. Evaluate the quality and condition of raw material received in refrigerated trucks to identify any possible contamination. Monitor and maintain the storage temperature of raw materials to ensure proper preservation. Inspect raw material quality using physical parameters such as odour, scales, eyes, gills, and overall appearance/ physical condition to determine suitability for processing. 	FIC/N4003, v1.0 PC1, PC2, PC3, PC4, KU9, KU10, KU11	Classroom lecture / PowerPoint Presentation / Question & Answer / Group Discussion	Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook, 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,	8 Theory (3:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
		Handling and Preparing Raw Fish and Seafood for Processing	<ul style="list-style-type: none"> Evaluate frozen/ chilled seafood for shipping temperature, signs of freezer burn, adequacy of protective covering, and integrity of packaging to ensure that the raw material is safe for processing. Conduct a tap test or observe the leg movement of live shellfish to evaluate their freshness and suitability for processing. Operate a washing tank to clean raw material before further processing. Show how to remove washed raw material from water and place it in crates/ containers Prepare ice flakes and store raw material on a bed of ice to maintain freshness and quality. Weigh the washed raw material and transfer it to the pre-processing area for further processing 	FIC/N4003, v1.0 PC4, PC5, PC6, PC7, PC8, KU17, KU18, KU19		Seam testers, Fillers of all type, Cutting/ slitting / trimming equipment, Typing/ sieving/ stapling equipment, Closing / sealing equipment, 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, Printing equipment, Palletisers, Bottle spotters, Aligners,	8 Theory (3:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
		Essential Techniques for Sorting, Grading, and Washing Fish and Seafood	<ul style="list-style-type: none"> Apply appropriate techniques to weigh and transfer raw material to the sorting table. Evaluate and inspect different fish and seafood species, identify and separate damaged, spoiled, or diseased seafood, and discard it appropriately. Categories, grade the sorted fish and seafood based on size and quality, and place them in their designated containers. Implement the manual or automated washing process for the graded fish and seafood by adjusting the spraying system valves to the appropriate pressure for optimal cleaning. Apply the correct disposal procedure for discarding the rejected fish and seafood. 	FIC/N4003, v1.0 PC9, PC10, PC11, PC12, PC13		Container cleaning/washing/drying systems, Accumulator/collectors, Unloaders, stackers, Feeding/orienting equipment, various types of fish and sea food	8 Theory (3:00) Practical (5:00)
		Hands-On Techniques for Pre-Processing Fish and Seafood	<ul style="list-style-type: none"> Evaluate the appropriate weight of graded fish and seafood for pre-processing. Demonstrate the skill of removing shells from shellfish for processing. 	FIC/N4003, v1.0 PC14, PC15, PC16, PC17			8 Theory (3:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
			<ul style="list-style-type: none"> Apply appropriate technique of slitting the fish from throat to abdomen for gutting. Demonstrate the procedure of removing the fish head manually or operate the deheader machine to cut the fish head mechanically. 				
		Efficient Pre-Processing Techniques for Fish and Seafood	<ul style="list-style-type: none"> Perform gut pulling and spooning techniques to clean and prepare fish for further processing. Show how to remove any leftover gut and organs running down the spine of the fish to ensure cleanliness and improve product quality. Demonstrate washing of fish and seafood with water or ice to remove any remaining impurities. Apply grading techniques to classify pre-processed fish and seafood based on size, weight, and quality. 	FIC/N4003, v1.0 PC18, PC19, PC20, PC21, PC22			7 Theory (2:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
			<ul style="list-style-type: none"> Show how to weigh and store the graded fish and seafood according to the organisation's temperature standards to maintain product quality until further processing. 				
		Standard Procedures for Receiving and Processing Raw Fish and Seafood	<ul style="list-style-type: none"> Illustrate the process of receiving pre-processed raw material (fish and seafood) according to established procedures. Apply standard operating procedures (SOP) to thaw frozen fish and seafood. Prepare and measure moisture retention agent according to SOP, and apply it to raw material to retain moisture, texture, flavour, and nutrients. Demonstrate the process of controlling and maintaining temperature to pasteurise fish, eliminating microbial load. Explain the importance of transferring pasteurised fish into chilled water to prevent overcooking. Show how to remove fish from chilled water and place them in a chilled state. 	FIC/N4003, v1.0 PC23, PC24, PC25, PC26, pC27, PC28			7 Theory (2:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
		Effective Processing and Packaging Techniques for Fish and Seafood Products	<ul style="list-style-type: none"> • Demonstrate how to set controls for temperature, conveyor speed, and push buttons to initiate the tunnel freezer and freeze fish to a specified temperature. • Demonstrate how to dip frozen fish in water/chilled water manually or using a glazing machine, adjust controls and speed to maintain water temperature, and glaze fish for a specified time. • Explain the process of preparing fillets by cutting them from the backbone, removing the collarbone and pin bones, inspecting fillets, and cutting them into portions based on weight and parts. • Demonstrate how to freeze and glaze fillets to a specified temperature. 	FIC/N4003, v1.0 PC29, PC30, PC31, PC32, PC33, PC34			7 Theory (2:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
			<ul style="list-style-type: none"> Apply appropriate techniques to pack weighed quantities of glazed fish and seafood products in primary packaging materials, label the packages, and pack them in cartons. Discuss the significance of sampling the product for quality analysis to ensure conformance to standards. Demonstrate how to transfer packed products to cold storage room and verify storage temperature using the temperature gauge at regular intervals. 				
		Post production cleaning and regular maintenance of equipment	<ul style="list-style-type: none"> Illustrate how to clean the work area, machinery, equipment, and tools using recommended cleaning agents and sanitisers to maintain hygiene and cleanliness. Apply appropriate techniques to attend minor repairs and faults in all machines to prevent delays in production and ensure smooth functioning. 	FIC/N4003, v1.0 PC36, PC37, PC38, PC39			7 Theory (2:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
			<ul style="list-style-type: none"> Explain how to ensure periodic maintenance of all machines and equipment as per the SOP or supplier's instructions/ manuals to minimise breakdowns and extend their lifespan. Explain the importance of cleaning machineries using with approved sanitisers following CIP procedure to prevent contamination and ensure product safety. 				
7	Document and record information	Document and maintain records of raw material for processing of fish and seafood	<ul style="list-style-type: none"> Record relevant details of raw materials used in the production process, including their name, variety, supplier information, receiving date, expiry date, quality parameters, and any internal quality analysis reports, in accordance with organisational standards. 	FIC/N4004, v1.0 PC1, PC2, PC3, PC4, KU9, KU10, KU11, KU13, KU14	Classroom lecture / PowerPoint Presentation / Question & Answer / Group Discussion	Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook, Food safety manual, and logbooks.	8 Theory (3:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
			<ul style="list-style-type: none"> Identify and record any observations related to raw or packaging materials used in production. Input raw material information into the ERP system for future reference and easy tracking. Analyse and verify documents, tracking the process from finished product to raw materials, in case of quality concerns or during quality management system audits. Evaluate the importance of accurate documentation and tracking in ensuring product quality and compliance with quality management systems. 				
		Docu-ment and maintain records on production sched-ule and process parame-ters for processing of fish and seafood Part - 1	<ul style="list-style-type: none"> State the importance of documenting process plans with details such as product details, process sequence, equipment and machinery details, efficiency and capacity utilisation of equipment. 	FIC/N4004, v1.0 PC5, PC6, PC7, KU8			7 Theory (2:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
			<ul style="list-style-type: none"> Organise process details in a chart or production log for all types of raw materials handled, including raw material type, variety/species, and process parameters such as temperature and time. Show how to document the batch size, raw material usage, yield after each stage of the process, wastage, energy utilisation, and final yield to determine the overall efficiency and productivity of the production process. 				
		Document and maintain records on production schedule and process parameters for processing of fish and seafood Part - 2	<ul style="list-style-type: none"> Record any observations or deviations related to the production process to ensure quality control and improvement. Demonstrate the process of entering the production plan and process details into an ERP system for easy access and future reference. 	FIC/N4004, v1.0 PC8, PC9, PC10, KU13, KU14			7 Theory (2:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
			<ul style="list-style-type: none"> Illustrate the procedure to verify documents and track products from finished goods to raw materials in case of quality concerns and for quality management system audits to ensure compliance with regulations. 				
		Document and maintain records on the finished products for processing of fish and seafood	<ul style="list-style-type: none"> Create a document to record the types of processed food products manufactured by the organisation. Show how to document the processed food details such as batch number, time of packing, date of manufacture, date of expiry, other label details, primary and secondary packaging materials for all finished products, storage conditions, etc., per organisation standards. Evaluate and record any deviations or observations related to processed food products to ensure quality control. Use ERP system to maintain a record of finished products for future reference. 	FIC/N4004, v1.0 PC11, PC12, PC13, PC14, PC15, KU13, KU14			8 Theory (3:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
			<ul style="list-style-type: none"> Analyse and verify documents to track processed food products from raw materials to finished goods in the event of quality concerns or for quality management system audits. 				
8	Food safety, hygiene and sanitation for processing fish and sea food	Ensuring Food Safety and Hygiene in the Production Process Part - 1	<ul style="list-style-type: none"> Analyse the food safety and hygiene procedures followed in the organisation to ensure compliance with regulations and standards. Apply personal hygiene practices such as wearing gloves, hairnets, masks, ear plugs, goggles, and shoes to prevent contamination of food products. Evaluate and ensure the hygienic production of food products by inspecting raw materials, ingredients, and finished products for compliance with physical, chemical, and microbiological parameters. 	FIC/N9001 v1.0 PC1, PC2, PC3, KU12, KU13	Classroom lecture / PowerPoint Presentation / Question & Answer / Group Discussion	Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook, Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	8 Theory (3:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
		Ensuring Food Safety and Hygiene in the Production Process Part - 2	<ul style="list-style-type: none"> Demonstrate the ability to select appropriate packaging materials for different types of products and effectively package them to prevent pest and infestation. Evaluate and implement cleaning, maintenance and monitoring procedures for food processing equipment to ensure that they are functioning optimally and only used for the specified purpose. Analyse the importance of housekeeping practices and designate areas for machines/ tools to maintain a clean and organised work environment. Assess industry standards such as GMP, HACCP, and product recall processes to ensure compliance with regulatory requirements. 	FIC/N9001 v1.0 PC4, PC5, PC7, PC8, KU20, KU21, KU22			7 Theory (2:00) Practical (5:00)
		Main-taining Workplace Safety and Hygiene	<ul style="list-style-type: none"> Describe Fire Safety. Demonstrate the correct use of safety equipment such as fire extinguisher, eye wash unit, and first aid kit when required to maintain a safe working environment. 	FIC/N9001 v1.0 PC6, PC9, PC10, PC11, PC12, KU11			7 Theory (2:00) Practical (5:00)

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
			<ul style="list-style-type: none"> • Explain the importance of attending training on hazard management to understand physical, chemical and biological hazards and measures to control and prevent them. • Identify problems such as rodents and pests in the workplace, document them and report to management. • Conduct a workplace checklist audit before and after work to ensure safety and hygiene protocols compliance. • Create a document that maintains records of raw materials, packaging materials, processes, and finished products to ensure the credibility and effectiveness of the food safety control system. • Analyse the importance of maintaining such records and the impact they have on the food safety control system. 				

SL	Module Name	Session Name	Session Objectives	NOS	Methodology	Training Tools/Aids	Duration (hours)
		Apply food safety practices for processing food products	<ul style="list-style-type: none"> Analyse the quality of food by evaluating criteria such as odour, appearance, taste, and best before date and take appropriate measures to prevent spoilage. Develop a separate system to store raw materials, finished products, and allergens to prevent cross-contamination. Create labels for raw materials and finished products and store them in different storage areas based on safe food practices. Apply stock rotation practices based on FEFO/ FIFO principles to ensure the freshness and quality of products. 	FIC/N9001 v1.0 PC13,PC14, PC15, PC16, KU9, KU10, KU17, KU18, KU19			8 Theory (3:00) Practical (5:00)
Total							Theory: 90:00 Practical: 150:00
OJT							00:00
Employability Skills (DGT/VSQ/N0101)							30:00
Total Duration							Theory + Practical + OJT+ ES 270:00

Annexure II

Assessment Criteria

CRITERIA FOR ASSESSMENT OF TRAINEES

Assessment Criteria for Fish and Seafood Processing Technician	
Job Role	Fish and Seafood Processing Technician
Qualification Pack	FIC/Q4001, V3.0
Sector Skill Council	Food Processing

S. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
2	Assessment will be conducted for all compulsory NOS, as well as the selected elective NOS/set of NOS.
	OR
4	Assessment will be conducted for all compulsory NOS, as well as the selected optional NOS/set of NOS.
5	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
6	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
7	To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
8	In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack

Assessable Outcomes	Assessment Criteria for Outcomes	Marks Allocation	
		Theory	Practical
FIC/N4001: Prepare and maintain work area and process machineries for processing fish and seafood	PC1. clean and maintain the cleanliness of the work area using approved sanitizers and keep it free from dust, waste, flies and pests	10	15
	PC2. ensure that the work area is safe and hygienic for food processing	3	7
	PC3. dispose waste materials as per defined SOPs and industry requirements	5	10
	PC4. check the working and performance of all machineries and tools such as deheading machine, gutting machine, fillet machine, pin bone puller, de-boning machine, skinning machine, vacuum packer, freezing equipments, packaging machines, etc.	5	10
	PC5. clean the machineries and tools used with approved sanitizers following the company specifications and SOP's	5	10
	PC6. place the necessary tools required for process	2	3
	PC7. attend to minor repairs/ faults of all machines, if required	5	10
	NOS Total	35	65

FIC/N4002: Prepare for execution of fish and sea food processing	PC1. read and understand the production order from the supervisor	4	6
	PC2. check the availability of raw materials, packaging materials, equipment and manpower	2	3
	PC3. support in planning production sequence by: grouping raw material (various types of fish and seafood) of same type/species selecting raw materials that do not impact the quality of the other avoiding CIP after processing each raw material using the same equipment and machinery for various types of fish and seafood planning maximum capacity utilization of machineries considering the process time for each product planning efficient utilization of resources/ manpower prioritizing urgent orders	5	10
	PC4. calculate the batch size based on the production order and machine capacity	2	3
	PC5. calculate the raw material requirement (considering process loss) to obtain required quantity of finished product(s)	2	3
	PC6. calculate the raw materials (including ingredients, if any), packaging materials and manpower requirement for completing the order	2	3
	PC7. ensure the working and performance of each equipment required for process	2	5
	PC8. calculate the process time for effective utilization of machineries	2	5
	PC9. plan batch size considering full capacity utilization of machineries	1	2
	PC10. plan to utilize machineries for multiple products without affecting the quality of the finished products, and to optimize production and save energy	1	2
	PC11. allot responsibilities/ work to the assistants and helpers	2	3
	PC12. refer to the process chart for raw material to be processed	1	2
	PC13. weigh the raw materials required for order	1	2
	PC14. check the conformance of raw material quality to organization standards, through physical analysis, and by referring to the quality analysis report from the supplier / internal lab analysis report	2	4
	PC15. ensure working and performance of required machineries and tools	2	4
	PC16. keep the tools accessible to attend repairs/faults in case of breakdown	0.5	1.5
	PC17. check the cold storage room for its condition and space availability	1.5	3.5
	PC18. set and maintain required temperature of storage area	2	3
	NOS Total	35	65
FIC/N4003: Execution of fish and sea food processing	PC1. receive live or chilled raw material (fish and sea food) in refrigerated trucks	0.5	0.5
	PC2. check the raw material and condition of the transporting vehicle for any possible contamination	0.5	0.5
	PC3. check the container to see if the raw material is adequately iced and storage temperature is maintained; check temperature of the raw material	0.5	1.5
	PC4. inspect raw material quality through physical parameters like odour, scales, eyes, gills and overall appearance/ physical condition	1.5	1.5
	PC5. inspect frozen/chilled seafood for shipping temperature, signs of freezer burn, adequacy of protective covering and integrity of packaging, inspect live shellfish through tap test (tapping live oysters, mussels etc), leg movement (for lobsters, crab)	1.5	1.5
	PC6. dump raw material into washing tank for washing , remove washed raw material from water and place in crates/containers	0.5	1.5
	PC7. prepare ice flakes and place fresh whole fish and seafood on a bed of ice flakes, cover each layer of fish with layer of ice and store until further processing or weigh the washed raw material and transfer to the preprocessing area	0.5	1.5

PC8. weigh the washed raw material and transfer to the pre-processing area	0.5	0.5
PC9. weigh and transfer raw material to the sorting table	0.5	0.5
PC10. inspect and separate different species of fish and seafood, remove damaged, spoiled, diseased seafood and discard it	1	2
PC11. grade the sorted fish and seafood based on size and quality and place in designated container	1	2
PC12. wash graded fish and seafood manually (or) open valves of the spraying system for water and adjust pressure to wash by spraying water on fish	0.5	1.5
PC13. discard the rejects following the disposal procedure	0.5	0.5
PC14. weigh the graded fish and sea food for pre- processing	0.5	0.5
PC15. remove the shell (in case of shellfish)	2	3
PC16. slit the fish from the throat to the end of the abdomen (gutting)	2	3
PC17. remove the head manually (or) place and position the fish in the deheader machine and press button or lever to cut fish head mechanically (deheading)	2	3
PC18. pull out the gut and egg sac, either before or after deheading (gut pulling)	2	3
PC19. clean out any leftover gut and remove the organs that run down the spine of the fish (spooning)	1	2
PC20. wash with water or by showering with ice water	0.5	1.5
PC21. grade the pre-processed fish and seafood based on size, weight and quality and stack in respective bins	0.5	1.5
PC22. weigh the graded fish and sea food and transfer to the processing area (or) to cold storage room and store maintaining temperature as per organisation standards until further processing	0.5	1.5
PC23. receive pre-processed raw material (fish and sea food) for processing	0.5	1.5
PC24. thaw fish and seafood (in case of frozen fish and sea food) following SOP	0.5	1.5
PC25. prepare/measure moisture retention agent following sop, weigh raw material and soak in moisture retention agents for retention of moisture, texture, flavour and nutrients	1	2
PC26. control and maintain temperature to pasteurize fish for removal of microbial load	1	2
PC27. transfer pasteurized fish into chilled water to prevent overcooking	0.5	0.5
PC28. remove fish from chilled water, place chilled fish in vibrate belt, adjust controls and start vibrate belt to remove excess water from fish	1	2
PC29. set controls such as temperature, conveyor speed of tunnel freezer and push buttons to start, place fish and seafood on conveyor and allow it to pass through the tunnel freezer to freeze to specified temperature (or) place fish and seafood in trays and load trays in freezer, maintain and control temperature of freezer to freeze fish	2	3
PC30. dip frozen fish in water/ chilled water manually and remove after specified time for glazing (or) start pump to circulate water or control spraying system to spray water, adjust controls to maintain water temperature in glazing machine, adjust speed of the conveyor to allow the frozen fish to dip in water for specified time, and remove glazed fish from conveyor	1.5	2.5
PC31. prepare fillet, cut fillets (dorsal and abdominal muscles) from the backbone and remove the collarbone, remove skin if required, remove pin bones, inspect fillets and remove damages, cut into portions based on weight and parts (like loin, belly flap, tail, etc.), freeze to specified temperature and glaze fillets	1.5	2.5






	PC32. pack weighed quantity of the glazed fish and sea food products in primary packaging material and label as well as pack the primary packaged product in cartons	1	4
	PC33. sample the product for quality analysis to ensure conformance to standards	1	2
	PC34. transfer packed products to cold storage room, and ensure storage temperature is maintained by verifying the temperature gauge at regular intervals	0.5	1.5
	PC36. clean the work area, machineries, equipment and tools using recommended cleaning agents and sanitizers	0.5	1.5
	PC37. attend minor repairs/faults of all machines (if any)	0.5	1.5
	PC38. ensure periodic (daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment following the SOP or following suppliers instructions/manuals	0.5	0.5
	PC35. clean the machineries used with approved sanitizers following CIP procedure	1	2
	NOS Total	35	65
FIC/N9001: Ensure food safety, hygiene and sanitation for processing food products	PC1. comply with food safety and hygiene procedures followed in the organization	2	3
	PC2. ensure personal hygiene by use of gloves, hairnets, masks, ear plugs, goggles, shoes, etc.	1	5
	PC3. ensure hygienic production of food by inspecting raw materials, ingredients, finished products etc. for compliance to physical, chemical and microbiological parameters	2	3
	PC4. pack products in appropriate packaging materials, label and store them in designated area, free from pests, flies and infestations	4	6
	PC5. clean, maintain and monitor food processing equipment periodically, using it only for the specified purpose	2	3
	PC6. use safety equipment such as fire extinguisher, eye wash unit, first aid kit when required	4	6
	PC7. follow housekeeping practices by having designated area for machines/ tools	2	3
	PC8. follow industry standards like GMP, HACCP and product recall process	4	6
	PC9. attend training on hazard management to understand types of hazards such as physical, chemical and biological hazards and measures to control and prevent them	1	4
	PC10. Identify, document and report problems such as rodents and pests to management	1	4
	PC11. conduct workplace checklist audit before and after work to ensure safety and hygiene	1	4
	PC12. document and maintain raw material, packaging material, process and finished products for the credibility and effectiveness of the food safety control system	1	3
	PC13. determine the quality of food using criteria such as odour, appearance, taste and best before date, and take immediate measures to prevent spoilage	2	3
	PC14. store raw materials, finished products and allergens separately to prevent cross contamination	2	3
	PC15. label raw materials and finished products and store them in different storage areas according to safe food practices	2	3






	PC16. follow stock rotation based on FEFO/FIFO	4	6
	NOS Total	35	65
FIC/N4004: Complete documentation and record keeping related to processing of fish and seafood	PC1. record details of all raw materials used in the process such as name and variety of raw materials, supplier details, receiving date/ date of manufacture, expiry date, supplier quality document, quality parameters of all raw materials, internal quality analysis report, etc. as per organization standards	6	4
	PC2. maintain record of observations (if any) related to raw materials, packaging materials	3	2
	PC3. load the raw materials details in erp for future reference	3	2
	PC4. verify the documents and track from finished product to raw materials, in case of quality concerns and during quality management system audits	3	2
	PC5. document process plan with details such as product details, process sequence, equipments and machinery details, efficiency and capacity utilization of equipment	6	4
	PC6. document process details such as type/ variety/species of raw material used, process parameters (temperature, time) in process chart or production log for all types of raw materials handled	9	6
	PC7. document batch size, raw material used, yield after each stage of process, wastage, energy utilization and final yield	6	4
	PC8. maintain record of observations (if any) or deviations related to process and production	3	2
	PC9. load the production plan and process details in erp for future reference	3	2
	PC10. verify documents and track from finished product to ingredients, in case of quality concerns and for quality management system audit	3	2
	PC11. document and maintain record of types of processed food	2	1
	PC12. document the processed food details such as batch number, time of packing, date of manufacture, date of expiry, other label details, primary and secondary packaging materials for all finished products, storage conditions, etc. as per organization standards	4	3
	PC13. maintain record of observations or deviations (if any) related to processed food	3	2
	PC14. load the finished product details in ERP for future reference	3	2
	PC15. verify the documents and track them from processed food to raw materials, in case of quality concerns and for quality management system audits	3	2
	NOS Total	60	40
DGT/VSQ/N0101: Employability Skills (30 Hours)	Introduction to Employability Skills	1	1
	PC1. understand the significance of employability skills in meeting the job requirements	-	-
	Constitutional values – Citizenship	1	1
	PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices	-	-
	Becoming a Professional in the 21st Century	1	3
	PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.	-	-
	Basic English Skills	2	3
	PC4. speak with others using some basic English phrases or sentences	-	-





Communication Skills	1	1
PC5. follow good manners while communicating with others	-	-
PC6. work with others in a team	-	-
Diversity & Inclusion	1	1
PC7. communicate and behave appropriately with all genders and PwD	-	-
PC8. report any issues related to sexual harassment	-	-
Financial and Legal Literacy	3	4
PC9. use various financial products and services safely and securely	-	-
PC10. calculate income, expenses, savings etc.	-	-
PC11. approach the concerned authorities for any exploitation as per legal rights and laws	-	-
Essential Digital Skills	4	6
PC12. operate digital devices and use its features and applications securely and safely	-	-
PC13. use internet and social media platforms securely and safely	-	-
Entrepreneurship	3	5
PC14. identify and assess opportunities for potential business	-	-
PC15. identify sources for arranging money and associated financial and legal challenges	-	-
Customer Service	2	2
PC16. identify different types of customers	-	-
PC17. identify customer needs and address them appropriately	-	-
PC18. follow appropriate hygiene and grooming standards	-	-
Getting ready for apprenticeship & Jobs	1	3
PC19. create a basic biodata	-	-
PC20. search for suitable jobs and apply	-	-
PC21. identify and register apprenticeship opportunities as per requirement	-	-
NOS Total	20	30

Annexure III

List of QR Codes Used in PHB

Module No.	Unit No.	Topic Name	Page No	Link for QR Code (s)	QR code (s)
1. Introduction	UNIT 1.1: Introduction to the Training Programme	1.1.1 Purpose and Benefits of the Training Programme	14	https://www.youtube.com/watch?v=wMu0EpUgCd4	 <p>Overview of the Food Processing Industry</p>
	UNIT 1.2: Introduction to the Food Processing Industry	1.2.1 Food Processing	14	https://www.youtube.com/watch?v=NiK1yeDtLPI	 <p>Overview of Fish and SeaFood Industry</p>
	UNIT 1.3: Introduction to the Fish and Sea food Processing	1.3.1 Fish and Sea Food Processing in India	14	https://www.youtube.com/watch?v=5HdXvLo16Ws	 <p>Orientation Video of Fish and Seafood Processing Industry</p>
	UNIT 1.4: Fish and Sea Food Processing	1.4.1 Types of Fish and Sea Food Products	14	https://www.youtube.com/watch?v=GeJip5dK2Ns	 <p>Types of Seafood product</p>
	UNIT 1.5: Attributes of a Fish and Sea Food Processing Technician	1.5.1 Roles and Responsibilities of a Fish and Sea Food Processing Technician	14	https://www.youtube.com/watch?v=2G1uq6k6tVw	 <p>Roles and Responsibility of Fish and Seafood Processing Technician</p>

Module No.	Unit No.	Topic Name	Page No	Link for QR Code (s)	QR code (s)
2. Food Safety, Hygiene and Sanitation for Processing Food Products	UNIT 2.3: Good Manufacturing Practices (GMP)	2.3.1 Good Manufacturing Practices (GMP)	28	https://www.youtube.com/watch?v=RS4A-uczS6E	 Lecture on GMP, GHP and FSMS
3. Prepare and Maintain Work Area and Process Machineries for Processing of Fish and Sea Food	UNIT 3.1: Equipment used for Fish and Sea food Processing	3.1.1 Fish and Sea Food Processing Equipment	44	https://www.youtube.com/watch?v=QwiwIzX_Asg	 The most important tools for your fish and seafood processing business
			44	https://www.youtube.com/watch?v=QWpU7DAfNcs	 Cleaning and Sanitation
5. Execution of Fish and Sea Food Processing	UNIT 5.1: Handling Grading and Sorting of Raw Material	5.1.1 Handling Raw Materials	74	https://www.youtube.com/watch?v=e5wfjR3WYVc	 Fish and Seafood Processing Technician
	UNIT 5.2: Pre-Processing and Processing of Fish and Sea Food	5.2.1 Handling During Pre-processing and Processing	74	https://www.youtube.com/watch?v=x5v7QwWxQi4	 Fish processing

Module No.	Unit No.	Topic Name	Page No	Link for QR Code (s)	QR code (s)
		5.2.1 Good Practices	74	https://www.youtube.com/watch?v=bn8mCcMg5IQ	 Frozen fish processing
6. Post Production Activities	UNIT 6.1: Packaging	6.1.1 What is Packaging?	84	https://www.youtube.com/watch?v=klhpTcSVX-U	 Packaging and Storage of Fish and Seafood Products
7. Complete Documentation and Record Keeping Related to Processing of Fish and Sea Food	UNIT 7.1: Documentation and Record Keeping	7.1.1 Need for Documentation	91	https://www.youtube.com/watch?v=kcpGIHBpphA	 Documentation & Record Keeping
Employability Skills (30 Hrs)				https://www.skillindiadigital.gov.in/content/list	



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