Model Curriculum

QP Name: Dairy Products Processor

QP Code: FIC/Q2001

QP Version: 1.0

NSQF Level: 5

Model Curriculum Version: 1.0

Food Industry Capacity and Skill Initiative (FICSI)
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Training Parameters

Sector	Food Processing
Sub-Sector	Dairy Products
Occupation	Processing
Country	India
NSQF Level	5
Aligned to NCO/ISCO/ISIC Code	NCO-2004/7413.90
Minimum Educational Qualification and Experience	1. Class 12th passed in science stream and 1 year of relevant experience 2. Class 10th passed and 3 years of diploma in relevant field 3. Class 10th passed and 3 years of dairy experience 4. Class 10th Pass and 2 years of ITI and 1 year experience 5. 10th Pass with 1 year of ITI and 2 years of experience
Pre-Requisite License or Training	1. Food standards and regulations 2. Operating different types of dairy processing equipment 3. Packing technology 4. GMP 5. HACCP 6. QMS 7. Computer basics and ERP system followed by the organization 8. Training in Food Safety Standards and Regulations (as per FSSAI) (Mandatory)
Minimum Job Entry Age	18 years
Last Reviewed On	30-05-2021
Next Review Date	29-05-2024
NSQC Approval Date	19/02/2016
QP Version	1.0
Model Curriculum Creation Date	23/08/15
Model Curriculum Valid Up to Date	29/05/2024
Model Curriculum Version	1.0
Minimum Duration of the Course	540 Hours
Maximum Duration of the Course	540 Hours

Program Overview

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

Training Outcomes

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

- Prepare work area and process machineries for processing dairy products
- Prepare raw material for processing dairy products
- Carry out milk processing to produce various types of dairy products
- Document and maintain records related to dairy products processing
- Manage and lead a team effectively
- Apply food safety and hygiene practices at the workplace

Compulsory Modules

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

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
Introduction to the sector and the job	**04:00 Hours**	**10:00 Hours**	**00:00 Hours**	**00:00 Hours**	**14:00 Hours**
Module 1: Introduction to the training program and overview of food processing industry	02:00 Hours	00:00 Hours	00:00 Hours	00:00 Hours	02:00 Hours
Module 2: Professional and Core Skills	02:00 Hours	10:00 Hours	00:00 Hours	00:00 Hours	12:00 Hours
FIC/N2001 Prepare and maintain work area and process machineries for processing dairy products NOS Version No.: 1.0 NSQF Level: 5	**10:00 Hours**	**20:00 Hours**	**00:00 Hours**	**00:00 Hours**	**30:00 Hours**
Module 3: Prepare and maintain work area and process machineries for processing dairy products	10:00 Hours	20:00 Hours	00:00 Hours	00:00 Hours	30:00 Hours

FIC/N2002 Prepare for processing dairy products NOS Version No.: 1.0 NSQF Level: 5	**10:00 Hours**	**60:00 Hours**	**00:00 Hours**	**00:00 Hours**	**70:00 Hours**
Module 4: Prepare for processing dairy products	10:00 Hours	60:00 Hours	00:00 Hours	00:00 Hours	70:00 Hours
FIC/N2003 Process dairy products NOS Version No.: 1.0 NSQF Level: 5	**88:00 Hours**	**210:00 Hours**	**00:00 Hours**	**00:00 Hours**	**298:00 Hours**
Module 5: Process dairy products	80:00 Hours	200:00 Hours	00:00 Hours	00:00 Hours	280:00 Hours
Module 6: Organizational standards and norms	08:00 Hours	10:00 Hours	00:00 Hours	00:00 Hours	18:00 Hours
FIC/N2004 Complete documentation and record keeping related to processing dairy products NOS Version No.: 1.0 NSQF Level: 5	**10:00 Hours**	**14:00 Hours**	**00:00 Hours**	**00:00 Hours**	**24:00 Hours**
Module 7: Document and record information	06:00 Hours	04:00 Hours	00:00 Hours	00:00 Hours	10:00 Hours
Module 8: IT Orientation	04:00 Hours	10:00 Hours	00:00 Hours	00:00 Hours	14:00 Hours
FIC/N9001 Food safety, hygiene and sanitation for processing food products NOS Version No.: 1.0 NSQF Level: 3	**15:00 Hours**	**35:00 Hours**	**00:00 Hours**	**00:00 Hours**	**50:00 Hours**
Module 9: Food safety, hygiene and sanitation for processing food products	15:00 Hours	35:00 Hours	00:00 Hours	00:00 Hours	50:00 Hours
FIC/N9004 Manage and lead a team NOS Version No.: 1.0 NSQF Level: 4	**04:00 Hours**	**10:00 Hours**	**00:00 Hours**	**00:00 Hours**	**14:00 Hours**
Module 10: Leadership Skills	04:00 Hours	10:00 Hours	00:00 Hours	00:00 Hours	14:00 Hours
Employability and Entrepreneurship skills	**28:00 Hours**	**12:00 Hours**	**00:00 Hours**	**00:00 Hours**	**40:00 Hours**
Module 11: Employability and Entrepreneurship skills	28:00 Hours	12:00 Hours	00:00 Hours	00:00 Hours	40:00 Hours

Total Duration	**169:00 Hours**	**371:00 Hours**	**00:00 Hours**	**00:00 Hours**	**540:00 Hours**

Module Details

Module 1: Introduction to the training program and overview of food processing industry

Bridge Module

Terminal Outcomes:

- Discuss the various sectors of food processing industry
- List the methods of testing milk

Duration: *02:00*	**Duration**: *00:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Define food processing. • List the various sub sectors of food processing industry. • Define dairy processing. • State the composition and nutritive value of milk. • State the need for processing of milk. • List the various units within a dairy processing plant. • State the methods of testing milk for accepted quality standards.	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook.	
Tools, Equipment and Other Requirements	
Nil	

Module 2: Professional and Core Skills
Bridge Module

Terminal Outcomes:

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

Duration: *02:00*	**Duration**: *10:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Identify personal strengths and weaknesses. • Discuss the importance of workorder in the process. • State the importance of decision making in the job. • State the importance of communicating effectively.	• Apply standard practice to undertake a self-assessment test for identifying strengths and weaknesses. • Plan and prioritise tasks effectively to ensure timely completion. • Demonstrate the ways to analyse situations for identifying problems and making sound decision promptly.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Nil	

Module 3: Prepare work area and equipment for processing dairy products
Mapped to FIC/N2001 v1.0

Terminal Outcomes:

- Discuss the tasks to be performed before starting production.
- State the importance of maintaining tools and equipment effectively.

Duration: *10:00*	**Duration**: *20:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the materials and equipment used in the cleaning and maintenance of the work area • Discuss the common detergents and sanitizers used in cleaning work area and machineries • Describe the methods of cleaning and sanitization • Describe the functions to be carried out before starting production • List the different types of maintenance procedures.	• Show how to Conduct minor repairs and faults in process machineries Prepare the machines and tools required for production • Display the process of preparing the work area for scheduled production
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
pH Meter, Weighing Balance, Beaker, Bunsen Burner, Filter, Homogenizer, Pasteurizer, Separator, Clarifier, Packaging Machines, Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual	

Module 4: Prepare for processing dairy products
Mapped to FIC/N2002 v1.0

Terminal Outcomes:

- List the tasks to be performed to check the condition of machines.
- Demonstrate the techniques to assemble all the components of machines.

Duration: *10:00*	**Duration**: *60:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe how to calculate the process time for effective utilization of machineries and manpower • Discuss how to analyse the quality of raw material by assessing its physical parameters.	• Perform a check if all the machineries are clean and in good working conditions • Demonstrate how to plan the production process • Demonstrate how to calculate the process time for effective utilisation of machineries • Explain how to plan batch size considering full capacity utilisation of equipment • Demonstrate assembling of all components of machines • Perform a pre check on working of all machineries • Organise raw materials and equipments as per the production schedule • Demonstrate the calculation of raw material required for the desired quantity of finished products
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
pH Meter, Weighing Balance, Beaker, Bunsen Burner, Filter, Homogenizer, Pasteurizer, Separator, Clarifier, Packaging Machines, Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual	

Module 5: Process dairy products
Mapped to FIC/N2003 v1.0

Terminal Outcomes:

- Discuss the use of different equipment for processing milk and other dairy products.
- Demonstrate the cleaning of equipment.

Duration: *80:00*	**Duration**: *200:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the method of analysing the quality of the finished product • State the composition of milk • List the different types of milk products • State the composition and nutritive value of the milk products • Explain the process of testing milk for accepted quality standards • Demonstrate the test for checking the quality of milk • Describe the procedure for organoleptic test of milk • Describe the procedure for COB test of milk • State the production process of pasteurisation • Explain the process of separation and bactofugation • State the method of standardisation of milk • State the method of homogenisation of milk • State the method of heat exchange during pasteurisation • State the method of standardisation of milk • Explain the process of HTST	• Perform a check if all the machineries are clean and in good working conditions • Demonstrate the receiving of milk and checking its quality • Show how to Use the filter to remove sediments from milk • Demonstrate the process of producing milk products from processed milk • Demonstrate use of separator for separation of cream from milk • Display use of homogenizer for getting desire fat content • Demonstrate use of pasteurizer • Demonstrate chilling of milk in the chilling tank • Demonstrate the preparation of various dairy products like butter, ghee, yogurt etc. • Demonstrate the process of receiving and storing raw milk till it is send for processing • Demonstrate how to carry out processing of pasteurized milk for different types of milk • Demonstrate the process of HTST pasteurisation

pasteurization • List the different packaging materials used to pack dairy products • State the method of packaging dairy products	• Demonstrate the process of producing lassi • Demonstrate the process of producing flavoured drinks • Demonstrate the process of producing cheese • Demonstrate the process of producing paneer • Demonstrate the process of producing dahi • Demonstrate the process of producing kalakand • Demonstrate the process of producing butter • Demonstrate the process of producing cooking butter • Demonstrate the process of producing ghee • Demonstrate the packaging of dairy products • Demonstrate cleaning the machineries used with recommended sanitizers following CIP (clean-in place) procedure • Demonstrate cleaning the equipment and tools used using recommended cleaning agents and sanitizers.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Cleaning Machine, Grinding Machines, Hydroclones, Sieving Machine, Conveyor, Drying Machine, Packaging Machine, Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual.	

Module 6: Organizational standards and norms

Mapped to FIC/N2003 v1.0

Terminal Outcomes:

- Discuss the roles and responsibilities of dairy products processor
- Describe importance of personal hygiene and sanitation

Duration: *08:00*	**Duration**: *10:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the roles and responsibilities of a dairy products processor • Describe how to conduct yourself at the workplace • Discuss the personal hygiene and sanitation guidelines • Describe the food safety hygiene standards to follow in a work environment	• Apply personal hygiene and sanitation guidelines. • Apply food safety hygiene standards in the work environment. • Demonstrate how to conduct yourself at the workplace • Execute the roles and responsibilities as per organisational standards and norms
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual.	

Module 7: Document and record information

Mapped to FIC/N2004 v1.0

Terminal Outcomes:

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

Duration: *06:00*	**Duration***: 04:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the importance of documentation and maintaining records during the entire work process. • List the method of documenting and recording the details of raw material to final finished product.	• Document necessary information such as production plan, process parameters, and finished products. • Prepare records to record information as per production and organisational requirements. • Demonstrate the process of maintaining documentation for raw materials • Execute the process of documenting production schedule and process parameters • Execute the process of documenting details of finished products
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Food safety manual, logbooks.	

Module 8: IT orientation

Mapped to FIC/N2004 v1.0

Terminal Outcomes:

- List the parts of a computer
- Demonstrate the effective use of data recording applications at the workplace

Duration: *04:00*	**Duration**: *10:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the various parts of a computer. • Describe the functions of different computer devices. • List the various applications used in recording information.	• Demonstrate the standard techniques used to operate a computer. • Show how to use an ERP software for recording information. • Demonstrate the effective use of applications such as word processor and spreadsheets.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Computer/laptop.	

Module 9: Food safety, hygiene and sanitation for processing food products
Mapped to FIC/N9001 v1.0

Terminal Outcomes:

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

Duration: *15:00*	**Duration**: *35:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the importance of safety, hygiene and sanitation at the workplace. • Discuss the relevant HACCP principles to be followed in the job.	• Demonstrate the steps to be performed to maintain a safe and hygiene workplace. • Demonstrate the steps to be performed to implement HACCP practices for ensuring food safety. • Roleplay a situation depicting the safety practices to be followed at the workplace. • Demonstrate the process of maintaining personal hygiene and sanitation • Identify the agents which are a potential food hazard and can cause adverse health effects • Demonstrate and apply food safety practices at workplace
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Protective gloves, head caps, aprons, safety goggles, safety boots, mouth covers, sanitizer, food safety manual ,logbooks etc.	

Module 10: Leadership Skills
Mapped to FIC/N9004 v1.0

Terminal Outcomes:

- Discuss the ways to conduct meetings and provide feedback to team.
- Demonstrate the effective method of conducting training of team members.

Duration: *04:00*	**Duration**: *10:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the ways to provide feedback to the team members • Discuss how to Conduct regular meetings with the team members	• Perform a check if the team is aware about the schedule and expectations from them • Demonstrate how to tell the team member to participate in various activities organized by the organization • Demonstrate counselling of team members • Show how to Conduct training of team members
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Computer/laptop., Log Books.	

Module 11 : Employability and Entrepreneurship skills

Terminal Outcomes:

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

Duration: *28:00*	**Duration: *12:00***
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss own strengths and weaknesses and analyse the gaps to ensure continuous improvement. • Discuss the measures to be undertaken to utilise time effectively thereby achieving maximum productivity. • List the characteristics of innovative individuals • List the levels of Maslow Hierarchy of needs • List the traits of effective team • Discuss tips for stress management • Discuss the importance of good work ethics • Discuss how to manage an enterprise • Describe how to plan effective strategies for solving problems and improving work culture within the team. • List the various types of digital marketing techniques. • Discuss the types and importance of e-commerce in promoting businesses. • List the various types of online banking services being used widely. • Discuss the procedure to apply for bank finances • List the elements of a proposal to attract future business opportunities and prospective clients. • Explain how to conduct entrepreneurial programs to identify business	• Show how to analyse a situation to identify gaps for improving the work process. • Demonstrate the procedure to plan the time taken to perform various tasks effectively. • Describe how market research is carried out • Role play the characteristics of an effective entrepreneur and leader • Demonstrate on how to identify new business opportunities • Prepare a sample plan to solve problems and improve productivity at the workplace. • Demonstrate the procedure to operate a computer for digital marketing, e-commerce, branding, etc. • Show how to use services such as NEFT, IMPS, UPI, RTGS for online banking.

opportunities, generate employment and increase clientele. • Understand the make in India campaign • Discuss the importance of Swachh Bharat Abhiyan • Understand the importance of entrepreneurship • Describe the traits of successful entrepreneur • List the types of enterprises • Understand the importance of effective speaking and listening • Discuss the importance of problem solving • Discuss how to deal with failures • Describe the core keys of marketing • Discuss ways to manage risks at workplace	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Nil	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification *<Select the minimum educational requirements, such as 12th Pass, Graduate or NSQF certified.>*	**Specialization** *<Specify the areas of specialization that are desirable.>*	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Diploma	Dairy Technology or Food Engineering	4	Dairy industry	1	Training of Dairy Products Processor	
B. Sc./B. Tech/BE	Dairy Technology or Food Engineering	2	Dairy industry	1	Training of Dairy Products Processor	
M. Sc./M. Tech/ME	Dairy Technology or Food Engineering	1	Dairy industry	1	Training of Dairy Products Processor	

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Dairy Products Processor" mapped to QP: "FIC/Q2001" Version 1.0, with minimum accepted score (80%) as per the FICSI guidelines.	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q2601". Minimum accepted score is 80% as per the FICSI guidelines.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification *<Select the minimum educational requirements, such as 12th Pass, Graduate or NSQF certified.>*	**Specialization** *<Specify the areas of specialization that are desirable.>*	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Diploma	Dairy Technology or Food Engineering	4		1	Assessment of Dairy Products Processor	
B. Sc./B. Tech/BE	Dairy Technology or Food Engineering	2	Bakery industry	1	Assessment of Dairy Products Processor	
M. Sc./M. Tech/ME	Dairy Technology or Food Engineering	1	Bakery industry	1	Assessment of Dairy Products Processor	

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Dairy Products Processor" mapped to QP: "FIC/Q2001" Version 1.0, with minimum accepted score (80%) as per the FICSI guidelines.	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q2701". Minimum accepted score is 80% as per the FICSI guidelines.

Assessment Strategy

This section includes the processes involved in identifying, gathering and interpreting information to evaluate the learner on the required competencies of the program.

Assessment will be based on the concept of Independent Assessors empanelled with Assessment Agencies, identified, selected, trained and certified on Assessment techniques. These assessors would be aligned to assess as per the laid down criteria.

Assessment Agency would conduct assessment only at the training centres of Training Partner or designated testing centers authorized by FICSI.

Ideally, the assessment will be a continuous process comprising of three distinct steps:

A. Mid- term assessment
B. Term / Final Assessment

Each National Occupational Standard (NOS) in the respective QPs will be assigned weightage. Therein each Performance Criteria in the NOS will be assigned marks for theory and / or practical based on relative importance and criticality of function.

This will facilitate preparation of question bank / paper sets for each of the QPs. Each of these papers sets / question bank so created by the Assessment Agency will be validated by the industry subject matter experts through FICSI, especially with regard to the practical test and the defined tolerances, finish, accuracy etc.

The following tools are proposed to be used for final assessment:

i. Written Test: This will comprise of (i) True / False Statements (ii) Multiple Choice Questions (iii) Matching Type Questions. Online system for this will be preferred.

ii. Practical Test: This will comprise a test job to be prepared as per project briefing following appropriate working steps, using necessary tools, equipment and instruments. Through observation it will be possible to ascertain candidate's aptitude, attention to details, quality consciousness etc. The end product will be measured against the pre-decided MCQ filled by the Assessor to gauge the level of his skill achievements.

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

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do **upon the completion of the training**.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do **upon the completion of a module.** A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
HACCP	Hazard Analysis and Critical Control Points
GMP	Good Manufacturing Practices
GHP	Good Hygiene Practices