FICSI
Food Industry Capacity and Skill Initiative
Sector skill council for food processing

Skill India
कौशल भारत-कुशल भारत

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

N•S•D•C
National
Skill Development
Corporation
Transforming the skill landscape

Model Curriculum

Dairy Products Processor

SECTOR: FOOD PROCESSING
SUB-SECTOR: DAIRY PRODUCTS
OCCUPATION: PROCESSING
REF. ID: FIC/Q2001, VERSION 1.0
NSQF LEVEL: 5

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Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

FOOD INDUSTRY CAPACITY AND SKILL INITIATIVE (FICSI)

for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: '**Dairy Products Processor**' QP No. '**FIC/Q2001 NSQF Level 5**'

Date of Issuance: **December 31, 2015**

Valid up to: **December 30 2016**

** Valid up to the next review date of the Qualification Pack*

Authorised Signatory
(Food Industry Capacity and Skill Initiative)

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Dairy Products Processor

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a "Dairy Products Processor", in the "Food Processing" Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	**Dairy Products Processor**		
Qualification Pack Name & Reference ID.	FIC/Q2001, Version 1.0		
Version No.	1.0	**Version Update Date**	31–12 – 2015
Pre-requisites to Training	Preferably class10th (Normal literacy of reading, writing and understanding) and 2-3 year experience in a dairy processing unit		
Training Outcomes	The programme will help in building the following key competencies amongst the learner: • Process milk to produce all types of dairy products; • Handle dairy equipment and machineries while maintaining process parameters; • Plan production sequence as per production order; • Observe food safety and hygiene standards at work.		

This course encompasses 6 out of 6 National Occupational Standards (NOS) of "Dairy Products Processor" Qualification Pack FIC/Q2001, Version 1.0 issued by issued by Food Industry Capacity and Skill Initiative.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	**Introduction to the training program** **Theory Duration** (hh:mm) 00:30 **Practical Duration** (hh:mm) 00:00 **Corresponding NOS Code** Bridge Module	• Introduce each other and build rapport with fellow participants and the trainer	White/Black board/ Chart paper, Markers/ computer and projector, Trainer's guide, student handbook
2	**Introduction of the Food Processing Industry** **Theory Duration** (hh:mm) 01:30 **Practical Duration** (hh:mm) 00:00 **Corresponding NOS Code** Bridge Module	• Define food processing • List the various sectors of the food processing industry	White/Black board/ Chart paper, Markers/ computer and projector, Trainer's guide, student handbook
3	**Introduction to the Dairy Industry** **Theory Duration** (hh:mm) 04:30 **Practical Duration** (hh:mm) 05:30 **Corresponding NOS Code** Bridge Module	• State the need for processing milk • List the various units within a dairy processing plant • Describe milk • State the composition of milk • List the different types of milk products • State the composition and nutritive value of the milk products • List the machineries used in a dairy processing plant • Explain the process of testing milk for accepted quality standards • Demonstrate the test for checking the quality of milk • Describe the procedure for or organoleptic test of milk • Describe the procedure for COB test of milk	White/Black board/ Chart paper, Markers/ computer and projector, Trainer's guide, student handbook, descriptive charts of a dairy plant, samples of various milk products, Milk Sampling Bottle, Milk Stirer, Tube (Glass), Mixy, Muslin Cloth, Weighing Machine, Measurement can, Utensils to Heat the Milk, milk testing kit and chemicals, test tube, hot water bath

Sr. No.	Module	Key Learning Outcomes	Equipment Required
4	**Organizational Standards and Norms** **Theory Duration** (hh:mm) 06:00 **Practical Duration** (hh:mm) 00:00 **Corresponding NOS Code** FIC/N2001 FIC/N9001	• State the roles and responsibilities of a dairy products processor in a dairy processing plant • State how to conduct yourself at a workplace • State the personal hygiene and sanitation guidelines to be followed • State the food safety hygiene standards to follow in a work environment	White/Black board/ Chart paper, Markers/ computer and projector, Trainer Guide, Student Handbook
5	**Preparation and Maintenance of Work Area and Process Machineries** **Theory Duration** (hh:mm) 06:00 **Practical Duration** (hh:mm) 10:00 **Corresponding NOS Code** FIC/N2002	• State the materials and equipment used in the cleaning and maintenance of the work area • State the common detergents and sanitizers used in cleaning work area and machineries • State the properties of the cleaning agents used • State the methods of cleaning and sanitization • Describe CIP method of cleaning • Describe SIP method of cleaning • Demonstrate the process of preparing the work area for scheduled production • Explain the method of managing and disposing waste material • Describe the functions to be carried out before starting production • Explain the maintenance procedure to be followed for dairy processing machineries before starting production • Explain the lubrication system followed in the dairy industry • State the different types of maintenance procedures • Demonstrate how to use tools safely • Demonstrate the process of lubricating machineries • Attend to minor repairs and faults in process machineries • Prepare the machines and tools required for production	Masks – Head cover, mouth cover, cleaning tools, approved sanitizers, approved lubricants for various machineries, Plates of Heat Exchanger (SS), Mixy, Muslin Cloth, Weighing Machine, Milk Sampling Bottle, Milk Stirer, Nut bolts (different Sizes), Can (Aluminium/SS), Thermometer, Test Tube (Glass), Test Tube Holder, Gas with Burner, Measurement Cane,

Sr. No.	Module	Key Learning Outcomes	Equipment Required
6	**Preparation for Processing Dairy Products** **Theory Duration** (hh:mm) 08:00 **Practical Duration** (hh:mm) 14:00 **Corresponding NOS Code** FIC/N2002	• Describe the process of planning production sequence to maximize capacity utilization of resources • Demonstrate the process of production planning • State the factors affecting operation efficiency during production • Explain the standard operating procedures followed in the dairy industry • List the ingredients required for production • State the production process of pasteurization • Explain the process of separation and bactofugation • State the method of standardization of milk • State the method of homogenization of milk • State the method of heat exchange during pasteurization • Explain the process of HTST pasteurization • Demonstrate the process of HTST pasteurization	White/Black board/ Chart paper, Markers/ computer and projector, Trainer Guide, Student Handbook
7	**Processing Dairy Products** **Theory Duration** (hh:mm) 12:00 **Practical Duration** (hh:mm) 17:30 **Corresponding NOS Code** FIC/N2003	• State the process for producing dairy products • Demonstrate the process of pasteurization • 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 ice-cream • Demonstrate the process of producing butter • Demonstrate the process of producing cooking butter • Demonstrate the process of producing ghee	Pasteuriser, separator, homogeniser, whey separator and dryer, cheese making machine and equipments, Heat Exchanger (SS), Mixy, Muslin Cloth, Weighing Machine, Milk Sampling Bottle, Milk Stirer, Nut bolts (different Sizes), Cane (Aluminium/SS), Thermometer, Test Tube (Glass), Test Tube Holder, Gas with Burner, Measurment Cane, Utensils to Heat the Milk, Joints/angles Opener, various cultures, ingredients as per recipe

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		• List the different packaging materials used to pack dairy products • State the method of packaging dairy products • Arrange for proper cleaning of production area, equipment, and tools used • Organize periodic maintenance of all production machineries	
8	**Documentation and Record Keeping** **Theory Duration** (hh:mm) 03:00 **Practical Duration** (hh:mm) 02:30 **Corresponding NOS Code** FIC/N2004	• State the need for documenting and maintaining records of raw materials, processes, and finished products • State the method of documenting and recording the details of raw material to final finished product • Demonstrate the process of documenting records of production plan, process parameters, and finished products	Board/Chart paper/ Laptop and Projector, Trainer Handbook, Participant handbook, etc.
9	**Food Safety, Hygiene and Sanitation** **Theory Duration** (hh:mm) 03:00 **Practical Duration** (hh:mm) 05:00 **Corresponding NOS Code** FIC/N9001	• State the importance of safety, hygiene and sanitation in food processing industry • Observe the industry standards to maintain a safe and hygienic workplace • Follow HACCP principles to eliminate food safety hazards in the process and products • Follow the safety practices in the work area	Board/Chart paper/ Laptop and Projector, Trainer Handbook, Participant handbook, etc., Sanitizers, Protective Gloves
10	**Professional Skills** **Theory Duration** (hh:mm) 02:30 **Practical Duration** (hh:mm) 04:00 **Corresponding NOS Code** Bridge Module	• Undertake a self-assessment test • Identify your strengths and weaknesses • Plan and schedule the work order • Identify control measures to resolve issues • Demonstrate the process of escalating issues during an emergency • Prevent potential problems from occurring • Resolve issues and problems by using the acquired knowledge • State the importance of listening	Board/Chart paper/ Laptop and Projector, Trainer Handbook, Participant handbook, etc.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
11	**IT Skills** **Theory Duration** (hh:mm) 05:00 **Practical Duration** (hh:mm) 09:30 **Corresponding NOS Code** Bridge Module	• Identify the different parts of a computer • Introduction to Microsoft Office Suite • Use the keyboard effectively • Use the Word processor effectively • Use Excel application effectively • Use Excel application to document day-to-day activities • Use Excel application to maintain records	Board/Chart paper/ Laptop and Projector, Trainer Handbook, Participant handbook, etc.
12	**Field Visits** **Theory Duration** (hh:mm) 05:00 **Practical Duration** (hh:mm) 19:00 **Corresponding NOS Code** Bridge Module	• Observe the location, layout, and safety aspects of the dairy unit visited • Observe the storage facilities for raw materials and finished products of the dairy unit visited • Observe the various machineries used in the dairy processing plant • Observe the various process machineries used in a dairy processing plant • Observe the production processes in a dairy processing plant • Observe the packaging and storage processes of raw material and finished product • Observe the post-production cleaning and maintenance process followed in the industry	All the above listed tools and equipment should be available at the site of the field visit
13	**Revision** **Theory Duration** (hh:mm) 06:00 **Practical Duration** (hh:mm) 00:00 **Corresponding NOS Code** Bridge Module	• Revise the knowledge gained so far	
14	**Evaluation** **Theory Duration** (hh:mm) 08:00	• Assess the knowledge and skills acquired by the participants	Motor (AC), Different Size of Stainless Steel (SS) Pipes, Different Size of Angles (SS), Different Size of Joint (SS), Different Size of Valves (SS), Plates of Heat Exchanger (SS), Mixy, Muslin Cloth, Weighing

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Practical Duration (hh:mm) 16:00 **Corresponding NOS Code** Bridge Module		Machine, Milk Sampling Bottle, Milk Stirer, Nut bolts (different Sizes), Cane (Aluminium/SS), Thermometer,Test Tube (Glass), Test Tube Holder, Gas with Burner, Measurment Cane, Utensils to Heat the Milk, Joints/angles Opener
15	**On-the-Job Training** **Theory Duration** (hh:mm) 10:00 **Practical Duration** (hh:mm) 54:00 **Corresponding NOS Code** Bridge Module	• Apply the skills and knowledge acquired in the training program in the field	All the above listed tools and equipment should be available at the site of the field visit
	Total Duration **240.00** **Theory Duration** **81.00** **Practical Duration** **159.00**	**Unique Equipment Required:** Motor (AC), Different Size of Stainless Steel (SS) Pipes, Different Size of Angles (SS), Different Size of Joint (SS), Different Size of Valves (SS), Plates of Heat Exchanger (SS), Mixy, Muslin Cloth, Weighing Machine, Milk Sampling Bottle, Milk Stirer, Nut bolts (different Sizes), Cane (Aluminium/SS), Thermometer, Test Tube (Glass), Test Tube Holder, Gas with Burner, Measurment Cane, Utensils to Heat the Milk, Joints/angles Opener, Pasteuriser, separator, homogeniser, whey separator and dryer, cheese making machine and equipments	

Grand Total Course Duration: 240 Hours, 0 Minutes

(This syllabus/ curriculum has been approved by SSC: Food Industry Capacity and Skill Initiative (FICSI)

Trainer Prerequisites for Job role: "Dairy Products Processor" mapped to Qualification Pack: "FIC/Q2001"

Sr. No.	Area	Details
1	**Description**	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack "FIC/Q2001".
2	**Personal Attributes**	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused, eager to learn and keep oneself updated with the latest in the mentioned field.
3	**Minimum Educational Qualifications**	• Diploma in Dairy Technology with 4 years of hand on experience in a Dairy industry or • B.Sc/B.Tech/BE in Dairy Technology or Food Engineering with 2-3 years of hand on experience in a Dairy industry or • M.Sc/M.Tech/ME in Food Engineering or Dairy Technology with 1-2 years of hand on experience in a Dairy industry.
4a	**Domain 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.
4b	**Platform Certification**	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "SSC/Q1402". Minimum accepted score (80%) as per the FICSI guidelines.
5	**Experience**	• Diploma in Dairy Technology with 4 years of hand on experience in a Dairy industry or • B.Sc/B.Tech/BE in Dairy Technology or Food Engineering with 2-3 years of hand on experience in a Dairy industry or • M.Sc/M.Tech/ME in Food Engineering or Dairy Technology with 1-2 years of hand on experience in a Dairy industry.

Annexure: Assessment Criteria

Assessment Criteria for Dairy Products Processor	
Job Role	Dairy Products Processor
Qualification Pack	FIC/Q2001, Version 1.0
Sector Skill Council	Food Processing

Sr. 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.
2	The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
4	Individual assessment agencies will create unique evaluation for skill practical for every student at each examination/training center based on this criteria
5	To pass the Qualification Pack , every trainee should score a minimum of 70% (overall) in every QP
6	In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack

Sr. No.	NOS No.	NOS Name	Total Marks	Marks Allocation: Skills	Marks Allocation: Knowledge
1	**FIC/N2001**	**Prepare and maintain work area and process machineries for processing dairy products**	100	65	35
2	**FIC/N2002**	**Prepare for processing dairy products**	100	65	35
3	**FIC/N2003**	**Process dairy products**	100	65	35
4	**FIC/N2004**	**Complete documentation and record keeping related to processing dairy products**	100	40	60
5	**FIC/N9001**	**Food safety, hygiene and sanitation for processing food products**	100	65	35
6	**FIC/9004**	**Manage and lead a team**	100	65	35
	Total:		**600**	**365**	**235**
	Percentage Weightage:		**100**	**60%**	**40%**
	Minimum Pass% to qualify:				

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Food Industry Capacity & Skill Initiative (FICSI)
FICCI, Federation House Tansen Marg, New Delhi 110001