



GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP
DIRECTORATE GENERAL OF TRAINING

COMPETENCY BASED CURRICULUM

CERTIFICATE COURSE ON

PROCESSOR (VALUE ADDED FOOD PRODUCTS)



NSQF LEVEL- 5

SECTOR : FOOD INDUSTRY

PROCESSOR (VALUE ADDED FOOD PRODUCTS)

Duration: 450 Hours

NSQF LEVEL - 5

(Version: 1.0)

Designed in 2021

Developed By

Ministry of Skill Development and Entrepreneurship

Directorate General of Training

&

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1. COURSE INFORMATION

1.1 GENERAL

The Directorate General of Training (DGT) under Ministry of Skill Development & Entrepreneurship offers a range of vocational training courses catering to the need of different sectors of the economy/ labour market. The vocational training programs of short term duration are intended for up skilling of NTC/ NAC pass out candidates. After passing out of the course, the trainee is awarded a competency based certificate approved by DGT.

The main objective of this Short term course is to enable man power in **Processing of Value Added Food Products** as Food processing industries lead to the highest employment in all industry. So, giving employment indirectly to the almost lakhs of people. Food processing industry in India provides numbers of direct and indirect employment opportunities because it somehow connects the Agriculture to the Manufacturing. The most common areas of employment are Canning, Dairy and Food Processing, Packaging etc. In this course the trainee learns to identify and select fresh fruits and vegetables with the help of checklist; prepare fruit juices with juice extracting machines with safety precautions and preserve fruit juices with addition of preservatives and determine the acidity and TSS content; prepare and preserve Tomato products by using appropriate machines ; prepare, preserve and store jam, jelly and marmalades by using appropriate machines; explain and understand the process of preparation of fermented beverages. He/she is able to explain the methods of soda-water production and also prepare fruits/ vegetables pickles with oil/ salt/ vinegar/ spices, determine acidity content; check physical quality parameters in frozen market samples of frozen fruits and vegetables. This short term course will be very much useful in Food Industry as well for Self Employment.

1.2 PROGRESSION PATHWAYS

- Can join as Food Technologists in food processing Industries and progress further as senior food technologists, supervisor and rise up to the level of manager.
- Can do as job and work for food supply chain industries.
- Can become an entrepreneur and can establish own unit.

1.3 COURSE STRUCTURE

Table below depicts the distribution of training hours across various course elements during a period of 11 weeks: -

S No.	Course Element	Notional Training Hours
1.	Professional Skill (Trade Practical)	315
2.	Professional Knowledge (Trade Theory)	135
	Total	450

1.3 ASSESSMENT & CERTIFICATION

The trainees will be assessed for his/her Instructional skills, knowledge and attitude towards learning throughout the course span.

a) The Continuous Assessment (Internal) during the period of training will be done by Formative Assessment Method by testing for assessment criteria listed against learning outcomes. The training institute has to maintain an individual trainee portfolio as detailed in assessment guideline.

b) The pattern and marking structure is being notified by DGT from time to time. The learning outcome and assessment criteria will be the basis for setting question papers for final assessment.

c) Assessment will be evidence based comprising the following:

- Job carried out in labs/workshop/Field
- Answer sheet of assessment
- Viva-voce
- Participation and punctuality

Evidences of internal assessments are to be preserved until forthcoming Block examination for audit and verification by examining body.

d) The minimum pass percentage for skill test is 60%.

2. JOB ROLE

Brief description of Job roles:

Fruit and Vegetable Preservers, other; perform variety of routine tasks in canning and preserving food, fruits and vegetables not elsewhere classified, and may be designated according to nature of work performed such as: Peeler Hand peels skin of fruits and vegetables using hand knife. Grader examines, classifies and separates fruits, vegetables and fish according to size, quality, colour, condition or species. Washer tends machine that washes raw fruits or vegetables preparatory to canning, freezing or packing. Feeder Charger feeds machine with fruits or vegetables by hand for washing, shelling, shredding, cooking and pulping.

Technologist, Food; devises new or improved technique for processing, conservation, preservation, utilisation and evaluation of content of new food stuffs generated from plant and animal life and suitable for human consumption and animal breed. Conducts research processes to create new foods, improves existing techniques to economise processing and also to impart better values and taste to food, such as cold storage of perishable, meat, fish, etc., canning, pickling, dehydration of fruits and vegetable etc. evolves measures, such as infestation control, fungicidal treatment and insecticidal storage to protect foods from spoilage and damage. Examines food stuff contamination, adulteration, food value, etc. by biochemical and nutrition tests and quality control measures. Develops through research, new methods and processes for recovering useful and utilisable by-products from industrial and domestic wastes of food stuffs. May control and guide transformation process, such as blending, anti-oxidisation and microbiological and sanitary measures.

Reference NCO Code:

1. 7514.9900 – Fruits, Vegetables and Related Preservers, Others.
2. 2145.0800 - Technologist, Food/Chemical Engineer

3. GENERAL INFORMATION

Name of the Trade	PROCESSOR (VALUE ADDED FOOD PRODUCTS)	
Trade Code	DGT/8019	
Reference NCO - 2015	7514.9900 , 2145.0800	
NSQF Level	Level 5	
Duration of Craftsmen Training	450 Hours	
Entry Qualification	CTS / CITS Pass-out in Milk & Milk Product Technician or Agro Processing	
Unit Strength (No. of Student)	24	
Space Norms	96 Sq. m	
Power Norms	5 KW	
Instructors Qualification	<p>B.Voc/Degree in Food Technology or Post Harvest Management from UGC recognized university/college with One-year experience in relevant field/industry.</p> <p style="text-align: center;">OR</p> <p>Diploma (Minimum 2 years) in Food Technology or Post Harvest Management from recognized board or relevant Advanced Diploma (Vocational) from DGT with two years' experience in relevant field/industry.</p> <p style="text-align: center;">OR</p> <p>NTC/NAC passed in "Fruits and Vegetables Processing" trade with three years experience in relevant field.</p> <p>Essential Qualification: Relevant National Craft Instructor Certificate (NCIC) in any of the variants under DGT.</p>	
List of Tools and Equipment	As per Annexure – I	
Distribution of training on hourly basis: (Indicative only)		
Total hours/ Week	Trade practical	Trade theory
40	30	10

4. LEARNING OUTCOME

Learning outcomes are a reflection of total competencies of a trainee and assessment will be carried out as per the assessment criteria.

4.1 LEARNING OUTCOMES

1. Perform preparation, preservation and storage of jam and jelly by using appropriate machines.
2. Perform preparation and preservation of fruit juices with addition of the right amount of preservatives.
3. Demonstrate the methods of preparing fruits/ vegetables pickles and provide remedies to defective products.
4. Plan and execute the preparation & preservation of value added products made from Tomato.
5. Demonstrate the processing of preserves and candies.
6. Process value-added fruit beverages such as Squashes, RTS, Nectar, and perform proper packaging of these.
7. Demonstrate the preparation and packing of fermented beverages such as whiskey, beer, wine, rum and brandy commercially.
8. Prepare and demonstrate packaging of soda water by using appropriate process.

SYLLABUS – PROCESSOR (VALUE ADDED FOOD PRODUCTS)

Duration: 315 Hours

Duration	Reference Learning outcome	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
Professional Skill 42 Hrs.; Professional Knowledge 14 Hrs.	Perform preparation, preservation and storage of jam and jelly by using appropriate machines.	1. Plan and organise the preparation of Jam, jelly.	Jams, jellies : selection, preparation, production and preservation. Difference in between jam and jelly.
Professional Skill 42Hrs.; Professional Knowledge 14 Hrs.	Perform preparation and preservation of fruit juices with addition of the right amount of preservatives.	2. Perform preparation of Fruit Juice. 3. Perform preservation of fruits juices with addition of preservatives.	Technology of extraction of juices from different types of fruits. Definition of Preservatives-types of preservatives commonly used in food industry limits of usage of preservatives.
Professional Skill 42Hrs.; Professional Knowledge 20 Hrs.	Demonstrate the methods of preparing fruits/vegetables pickles and provide remedies to defective products.	4. Perform preparation of different types of pickles from fruits and vegetables.	Pickle, Different types of pickles. Methods of preparation curing techniques, defects and remedies.
Professional Skill 42Hrs.; Professional Knowledge 20 Hrs.	Plan and execute the preparation & preservation of value added products made from Tomato.	5. Prepare tomato juices, puree, sauces, ketchups, soup, paste, chutney etc.	Tomato products: Technology of manufacture of tomato products.
Professional Skill 36 Hrs.;	Demonstrate the processing of preserves and candies.	6. Demonstrate preparation of preserves and candies.	Definition of preserves, candy methods of preparation of these.

Professional Knowledge 12 Hrs.			
Professional Skill 42 Hrs.;	Process value –added fruit beverages such as Squashes, RTS, Nectar, and perform proper packaging of these.	7. Demonstrate preparation of common fruit beverages. 8. Determination of Acids content in fruits and vegetable products.	Fruit beverages: Squashes, nectars, R T S , e t c .
Professional Knowledge 20 Hrs.			
Professional Skill 39 Hrs.;	Demonstrate the preparation and packing of fermented beverages such as whiskey, beer, wine, rum and brandy commercially.	Alcoholic Beverages 9. Commercial process detail of manufacturing alcoholic beverages like whiskey, beer, wine, rum, brandy. 10. Role of ingredients used in production of various alcoholic beverages. 11. Nutritional and energy values of these products.	Ingredients used for the production of whiskey, beer, wine, rum, brandy. Study of beer, whiskey, wine, rum and brandy. Quality testing process in alcoholic beverages. Explain packaging of the alcoholic beverages.
Professional Knowledge 15 Hrs.			
Professional Skill 30 Hrs.;	Prepare and demonstrate packaging of soda water by using appropriate process.	12. Perform Production of soda water. 13. Demonstrate Packaging, labelling and storage of soda water.	Soda water : Principle and Method of soda water production. Raw material used in soda water, and their properties. Quality standards for soda water.
Professional Knowledge 20 Hrs.			
Project work / Industrial visit			

7. ASSESSMENT CRITERIA

LEARNING OUTCOMES	ASSESSMENT CRITERIA
Perform preparation, preservation and storage of jam and jelly by using appropriate machines.	Maintain perfect hygiene standard.
	Select perfect fruits.
	Prepare fruits for making fruit juice.
	Prepare fruit juice for fruit jelly.
	Perform Pectin test of fruit juice.
	Prepare jam/jelly.
	Determine the end point for jam/jelly.
Perform preparation and preservation of fruit juices with addition of the right amount of preservatives.	Maintain the perfect hygiene standard.
	Select perfect fruits.
	Wash and prepare fruits for juice.
	Prepare fruits juice.
	Measure juice.
	Determine TSS content.
	Determine acidity by calculation.
	Fill the preserved fruit juices in sterilized bottles.
	Cork and crown the bottles.
	Sterilize the bottles.
	Label the bottles.
Maintain safety.	
Demonstrate the methods of preparing fruits/ vegetables pickles and provide remedies to defective products.	Maintain perfect hygiene standard.
	Select fruits/ vegetables.
	Wash and prepare fruits/ vegetables.
	Prepare spices for pickle.
	Prepare pickles with oil/salt/ vinegar.
	Test titrable Acidity in pickle.
	Pack and store.
Maintain safety of pickle bottles.	
Plan and execute the preparation and preservation of value added products made from Tomato.	Maintain perfect hygiene standard.
	Prepare tomatoes.
	Prepare tomato juice/ tomato puree/tomato paste/ tomato sauce/tomato ketchup/tomato chutney/tomato soup.

	Preserve and store tomato juice/ tomato puree/ tomato paste/tomato sauce / tomato ketchup / tomato chutney/ tomato soup.
	Determine TSS.
	Determine acidity.
	Maintain safety of end products.
Demonstrate the processing of preserves and candies.	Maintain perfect hygiene standard.
	Select fruits/vegetables.
	Prepare fruit/vegetables.
	Prepare syrup.
	Test and adjust TSS content of syrup.
	Dry fruits/vegetables for candy.
	Pack and store.
	Maintain safety of the packed products.
Process value –added fruit beverages such as Squashes, RTS, Nectar, and perform proper packaging of these.	Maintain the perfect hygiene standard.
	Select perfect fruits.
	Wash and prepare fruits for juice.
	Prepare fruits juice.
	Measure juice.
	Determine TSS content.
	Determine acidity.
	Perform calculations for Squashes, RTS, Nectar preparation and mixing of ingredients.
	Fill beverage into sterilized bottles.
	Cork and crown the bottles.
	Label the bottle.
	Maintain safety of the fruit beverages bottles.
Demonstrate the preparation and packing of fermented beverages such as whiskey, beer, wine, rum and brandy commercially.	Explain principle of fermentation and process of fermentation.
	Explain manufacturing process of beer, whiskey, wine, rum and brandy.
	Maintain perfect hygiene standard.
	Select ingredients and machines.
	Prepare whisky, beer, wine, rum and brandy by using machines.
	Check the quality such alcohol content, TSS, pH, Acidity

	and Sensory Evaluation.
	Fill beverage into sterilized bottles.
	Cork and crown the bottles.
	Label the bottle.
	Maintain safety and precautions of prepared products.
Prepare and demonstrate packaging of soda water by using appropriate process.	Maintain perfect hygiene standard.
	Describe standard of water and types of water hardness.
	Describe temporary water treatment process.
	Explain types of water treatment like R.O., U.V. treatment.
	Explain production of Soda water.
	Production of Soda water.
	Add carbon dioxide.
	Cork and crown the bottles.
	Label the bottle
Maintain safety and precautions.	

LIST OF TOOLS & EQUIPMENT			
PROCESSOR (VALUE ADDED FOOD PRODUCTS)			
S No.	Name of the Tools and Equipment	Specification	Quantity
A. Description of Tools/ Machineries			
1.	Working tables		02
2.	Improved stoves	20 burner and gas cylinder	01
3.	Stainless steel pots	different capacities	20 sets
4.	Stainless steel knives	12-15 cm blade	20
5.	Stainless steel spoons	various shapes and sizes	20 sets
6.	Glass jars	various sizes and screw-on caps	As per requirement
7.	Wooden spoons		20
8.	Juice extractor		04
9.	Pulper		01
10.	Stainless steel Strainer		20
11.	Crown corking machine		01
12.	Refractometer	different range	5 set each
13.	Weighing balance	different range	3 piece each
14.	Pricker stainless steel		20
15.	Empty different size glass bottle for sauce and juices		As per requirement
16.	Food Processor with vegetable cutting attachment		04
17.	Cooker	different size	10 pics each
18.	Seed germinator	Cabinet type, Different chambers, Temp and RH Controller	01
19.	Vinegar generator	Chamber made of SS, with sparger and baffles	01
20.	Fermenter	Bioreactor, SS, with sparger and baffles	01
21.	Distillation Assembly		01
22.	Soda Making Machine		01
23.	Water Treatment Plant (Lab scale model)		01
24.	Electric Mixer		01
25.	Fruit Mill		01
26.	Pickle Rotary Mixer		01
27.	Liquid filling machine	For filling liquid in bottles, 200 ml, 500 ml, 1000 ml.	01
28.	Bottle Washer		01
29.	Autoclave/Retort	20 litre	01

30.	Ph Meter		01
31.	Jam bottle sealer		01
32.	Vacuum Bottle Filling Machine		01
33.	Lidding Machines		01
34.	Slicing Machine		01

ANNEXURE-II

The DGT sincerely acknowledges contributions of the Industries, State Directorates, Trade Experts, Domain Experts and all others who contributed in designing/ revising the curriculum. Special acknowledgement is extended by DGT to the following expert members who had contributed immensely in this curriculum.

Industries Involved in development of the qualification:

1. Marico Ltd., Mumbai
2. Pepsico, Gurgaon
3. GSK Consumer New Delhi
4. TATA Consumer Products New Delhi
5. Nestle, Panipat, Haryana
6. FSSAI-FDA, New Delhi
7. Ashoka Hotel, Delhi
8. Taj Hotel, Delhi
9. IRCTC, New Delhi
10. Food Lab, New Delhi

List of Expert Members contributed/ participated for finalizing the course curriculum of Processor (Value Added Food Products).			
S No.	Name & Designation Shri/Mr./Ms	Organization	Remarks
1.	Ishwar Singh, Director	DGT HQ	STCC Convener
2.	C.S. Murthy, Director	RDSDE, Kolkata	STCC Coordinator
3.	G.N. Eswarappa, JDT	CSTARI, Kolkata	Member
4.	Sachin Kumar, TO	NSTI (W), Prayagraj, UP	Expert
5.	Saurabh Chaturvedi, Director	Dadi ki Rasoi, Pvt. Ltd, Pratapgarh	Expert
6.	A. K. Kushwaha, Owner	Rajul Gramodyog, Prayagraj, UP	Expert
7.	Arti Kumari, Chef	Hotel Saket, Prayagraj, UP	Expert
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