



Model Curriculum

QP Name: Fruits and Vegetables Drying/Dehydration Technician

QP Code: FIC/Q0105

QP Version: 1.0

NSQF Level: 3

Model Curriculum Version: 1.0

FOOD INDUSTRY CAPACITY & SKILL INITIATIVE (FICSI),
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Training Parameters

Sector	Food Processing
Sub-Sector	Fruits and Vegetables
Occupation	Processing
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	NCO-2004/NIL
Minimum Educational Qualification and Experience	1. Class 8th passed or 2. Class 5th Passed and 3 years of experience
Pre-Requisite License or Training	Not Applicable
Minimum Job Entry Age	18 years
Last Reviewed On	30/07/2021
Next Review Date	30/07/2024
NSQC Approval Date	22/09/2015
QP Version	1.0
Model Curriculum Creation Date	23/08/2015
Model Curriculum Valid Up to Date	30/07/2024
Model Curriculum Version	1.0
Minimum Duration of the Course	300 Hours
Maximum Duration of the Course	300 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 learner will be able to:

- Prepare and maintain work area and process machineries for drying/dehydration
- Prepare raw material for drying/dehydration
- Dry/dehydrate fruits and vegetables
- Document and maintain records related to the drying/dehydration process
- Follow and maintain food safety and hygiene in the work environment

Compulsory Modules

The table lists the modules, their duration and mode of delivery.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
Bridge Module	06:00 Hours	12:00 Hours	00:00 Hours	00:00 Hours	18:00 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	04:00 Hours	12:00 Hours	00:00 Hours	00:00 Hours	16:00 Hours
FIC/N0116 Prepare and maintain work area and process machineries for drying/dehydration of fruits and vegetables NOS Version No.: 1.0 NSQF Level: 3	10:00 Hours	20:00 Hours	00:00 Hours	00:00 Hours	30:00 Hours
Module 3: Prepare for drying/dehydration of fruits and vegetables	10:00 Hours	20:00 Hours	00:00 Hours	00:00 Hours	30:00 Hours
FIC/N0117	10:00	26:00	00:00 Hours	00:00 Hours	36:00

Prepare for drying/dehydration of fruits and vegetables NOS Version No.: 1.0 NSQF Level: 3	Hours	Hours			Hours
Module 4: Prepare for drying/dehydration of fruits and vegetables	10:00 Hours	26:00 Hours	00:00 Hours	00:00 Hours	36:00 Hours
FIC/N0118-Dry/Dehydrate fruits and vegetables NOS Version No. NSQF Level 3	32:00 Hours	72:00 Hours	00:00 Hours	00:00 Hours	104:00 Hours
Module 5: Carry out Drying/Dehydration of fruits and vegetables	24:00 Hours	61:00 Hours	00:00 Hours	00:00 Hours	85:00 Hours
Module 6: Organizational Standards and Norms	08:00 Hours	11:00 Hours	00:00 Hours	00:00 Hours	19:00 Hours
FIC/N0119 Complete documentation and record keeping NOS Version No.: 1.0 NSQF Level: 3	06:00 Hours	04:00 Hours	00:00 Hours	00:00 Hours	10:00 Hours
Module 7: Complete documentation and record keeping	06:00 Hours	04:00 Hours	00:00 Hours	00:00 Hours	10:00 Hours
FIC/N9001 Food Safety, Hygiene and Sanitation NOS Version No.: 1.0 NSQF Level: 3	12:00 Hours	50:00 Hours	00:00 Hours	00:00 Hours	62:00 Hours
Module 8: Food Safety, Hygiene and Sanitation	06:00 Hours	35:00 Hours	00:00 Hours	00:00 Hours	47:00 Hours
Module 9: IT Orientation	06:00 Hours	15:00 Hours	00:00 Hours	00:00 Hours	21:00 Hours
Employability and Entrepreneurship	28:00 Hours	12:00 Hours	00:00 Hours	00:00 Hours	40:00 Hours

skills					
Module 14: Employability and Entrepreneurship skills	28:00 Hours	12:00 Hours	00:00 Hours	00:00 Hours	40:00 Hours
Total Duration	104:0 Hours	196:00 Hours	00:00 Hours	00:00 Hours	300:00 Hours

Module Details

Module 1: Introduction to the Training Program and Overview of Food Processing Industry

Bridge Module

Terminal Outcomes:

- Maintain work area and process machineries for selecting fruits and vegetables.

Duration: 02:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Follow introduction with each other and the trainer. • Define food processing. • List the various subsectors of food processing Industry. • Define fruits and vegetables Processing. • State the need for fruits and vegetables processing. • State the common methods of fruits and vegetables processing. • State the difference between drying and dehydration. • State the roles and responsibilities of fruits and egetablesdrying/dehydration technician. • Discuss the nature and availability of job opportunities. 	-
Classroom Aids	
-	
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: 04:00	Duration: 12:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Identify personal strengths and weaknesses. • State the importance of decision making in the job. • State the importance of communicating effectively. • State the importance of listening. • State the importance of reading skills. 	<ul style="list-style-type: none"> • 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:	
Laptop, white/black board, marker, chart papers, projector, Trainer's guide, Student manual.	
Tools, Equipment and Other Requirements	
Nil	

Module 3: Prepare and maintain work area and process machineries for drying/dehydration of fruits and vegetables

Mapped to FIC/N0116 v1.0

Terminal Outcomes:

- Prepare work area and process machineries required for baking.

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • List the materials and equipment used in cleaning and maintenance of the work area and process machineries, • State the cleaning processes used to clean the work area. 	<ul style="list-style-type: none"> • Demonstrate the appropriate method for cleaning and maintenance of work area to ensure the work area is safe and hygienic for food processing. • Identify different equipment used in processing of fruit pulp. • Demonstrate the cleaning of the process machineries required for production using recommended sanitizers. • Perform a check on the working of different tools and machineries used for drying/dehydration of fruits and vegetables
Classroom Aids:	
Washer, Peeler, Corer, Slicer, Drier, Packaging Machines, Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Safety Manual	
Tools, Equipment and Other Requirements	
Various Ovens, Baking Sheet and Racks, Commercial Mixer, Wire Whisker, Refrigerator, Fryer, Baking Pan, Cooling Rack, Bread Slicer Manual, Bread Slicer Mechanical, Utensils, Mixing Bowls, Cleaning Tools, Protective Gloves, MaskHead Cover, Mouth Cover.	

Module 4: Preparation for drying/dehydration of fruits and vegetables

Mapped to FIC/N0117 v1.0

Terminal Outcomes:

- Demonstrate the tasks involved in dough making
- Discuss the production sequence

Duration: 10:00	Duration: 26:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • State the methods for storing raw materials for later use. 	<ul style="list-style-type: none"> • Use basic mathematics for various calculations in day-to-day processes. • Plan the production schedule as per organizational standards and instructions. • Organize the raw materials, packaging materials, manpower, equipment and machineries for the scheduled production. • Identify the raw materials required for production as per production schedule and formation. • Plan the production sequence to maximize capacity, utilization of resources, manpower and machinery. • Calculate batch size and prioritize urgent orders based on the production schedule and machine capacity. • Inspect the conformance of raw material quality to company standards. • Organize quality raw material as per production process and company standards. • Check the raw material quality and grade. • Prepare the raw material for production.
Classroom Aids:	
NIL	
Tools, Equipment and Other Requirements	

Various Ovens, Baking Sheet and Racks, Commercial Mixer, Wire Whisker, Refrigerator, Fryer, Baking Pan, Cooling Rack, Bread Slicer Manual, Bread Slicer Mechanical, Cake Decorative Tool, Knife, Spatula, Utensils, Mixing Bowls, Measuring Cups and Spoons, Thermometer, Timer, Digital Hygrometer, Weighing Scale, Heat Resistant Gloves, Protective Gloves, Fire Extinguisher, MaskHead Cover, Mouth Cover.

Module 5: Carry out Drying/Dehydration of fruits and vegetables

Mapped to NOS/ FICN0118, v 1.0

Terminal Outcomes:

- Discuss the process to wash and dry the produce
- Demonstrate the standard practices followed to sort and grade the produce
- Demonstrate the standard practices followed to Package produce
- Demonstrate the standard practices followed during transportation and storage

Duration: 24:00	Duration: 61:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • State the need for washing of fruits or vegetables. • List various treatments that can be given to fruits and vegetables. 	<ul style="list-style-type: none"> • Perform washing of fruits and vegetables before sending for processing. • Carry out pre-production steps such as sorting, peeling, blanching etc. • Carry out sun drying of fruits and vegetables. • Identify the various control parameters of hot air oven. • Carry out hot air drying of fruits and vegetables. • Carry out freeze drying of fruits and vegetables. • Inspect, pack and store dried/dehydrated fruits and vegetables. • Carry out post production cleaning and regular maintenance of equipment
Classroom Aids	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Pump, Water, Spray System, Sorting Line Conveyor, Grading Line Conveyor, Electronic Sorting Machine, Packaging Machine, Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer, Food Safety Manual	

Module 6: Organizational standards and norms

Bridge Module

Terminal Outcomes:

- Discuss the roles and responsibilities of a
- Describe importance of personal hygiene and sanitation

Duration: 08:00	Duration: 11:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe how to conduct yourself at the workplace. • Describe the personal hygiene and sanitation guidelines to be followed at the workplace. 	<ul style="list-style-type: none"> • Demonstrate how to conduct yourself at the workplace. • Demonstrate the procedure to be followed to implement personal hygiene and sanitation guidelines at the workplace.
Classroom Aids:	
Laptop, white board, marker, chart papers, projector, trainer's guide and student handbook, protective gloves, head caps, aprons, safety goggles, safety boots, mouth masks, sanitizer, safety manual	
Tools, Equipment and Other Requirements	
Nil.	

Module 7: Complete documentation and record keeping related to drying/dehydration of fruits and vegetables

Mapped to FIC/N0119 v1.0

Terminal Outcomes:

- Explain the methods of documenting and recording the complete details
- Demonstrate the process of documenting records effectively

Duration: 06:00	Duration: 04:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Demonstrate the process of documenting records of production plan, process parameters, and finished products.
Classroom Aids:	
NIL	
Tools, Equipment and Other Requirements	
Food safety manual, Log books.	

Module 8: Food and safety, hygiene and sanitation

Mapped to FIC/N9001 v1.0

Terminal Outcomes:

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

Duration: 06:00	Duration: 35:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • State the importance of safety, hygiene and sanitation in the food industry. • Discuss about the industry standards to maintain a safe and hygiene workplace. 	<ul style="list-style-type: none"> • Demonstrate the safety practices to be followed in the work area. • Demonstrate the personal hygiene to be followed in the work area. • Apply HACCP principles to eliminate food safety hazards in the process and products.
Classroom Aids:	
NIL	
Tools, Equipment and Other Requirements	
Protective gloves, head caps, aprons, safety goggles, safety boots, mouth covers, sanitizer, safety manual, logbooks etc.	

Module 9: IT Orientation

Mapped to FIC/N5016 v1.0

Terminal Outcomes:

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

Duration: 06:00	Duration: 15:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • State the basic functionalities of the computer to perform day to day activities. • List the various parts of a computer. • Describe the functions of different computer devices. • List the various applications used in recording information. 	<ul style="list-style-type: none"> • Identify parts of computer. • 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. • Demonstrate how to use the computer to document day to-day activities.
Classroom Aids:	
Computer/Laptop.	
Tools, Equipment and Other Requirements	
NIL	

Module 10 : 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
<ul style="list-style-type: none"> • Discuss own strengths and weaknesses and analyse the gaps to ensure continuous improvement. • Discuss the measures to be undertaken to utilise time effectively thereby achieving maximum productivity. • List the characteristics of innovative individuals • List the levels of Maslow Hierarchy of needs • List the traits of effective team • Discuss tips for stress management • Discuss the importance of good work ethics • Discuss how to manage an enterprise • Describe how to plan effective strategies for solving problems and improving work culture within the team. • List the various types of digital marketing techniques. • Discuss the types and importance of e-commerce in promoting businesses. • List the various types of online banking services being used widely. • Discuss the procedure to apply for bank finances • List the elements of a proposal to attract future business opportunities and prospective clients. • Explain how to conduct entrepreneurial programs to identify business opportunities, generate employment and increase clientele. • Understand the make in India campaign • Discuss the importance of Swachh Bharat 	<ul style="list-style-type: none"> • 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.

<p>Abhiyan</p> <ul style="list-style-type: none"> • 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	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
M.Sc / M.Tech / M.E.	Food Technology or Food Engineering	2	Fruits and Vegetable processing	1	Training of Fruits and Vegetables drying/Dehydration technician	
B.Sc or Graduate / B.Tech / B.E.	Food Technology or Food Engineering	3	Fruits and Vegetable processing	1	Training of Fruits and Vegetables drying/Dehydration technician	
B.Sc	Food Science and Quality Control	4	Fruits and Vegetable processing	1	Training of Fruits and Vegetables drying/Dehydration technician	
Diploma in Food Technology / Food Engineering or Catering Technology	Food Technology or Food Engineering	4	Fruits and Vegetable processing	1	Training of Fruits and Vegetables drying/Dehydration technician	
B.Sc	Home Science	5	Fruits and Vegetable processing	1	Training of Fruits and Vegetables drying/Dehydration technician	
Diploma / Hotel Management / Certificate course	Fruits and Vegetable processing	5	Fruits and Vegetable processing	1	Training of Fruits and Vegetables drying/Dehydration technician	

Trainer Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Fruits and Vegetables drying/Dehydration technician" mapped to QP: "FIC/Q0105, v1.0". Minimum accepted score is 80%	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q0102". Minimum accepted score is 80 % as per FICSI guidelines.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
B. Sc/Diploma in hotel management/Food Technology/Home Science/Post Harvest Management	Fruits/Vegetables Procurement	5	Fruits/Vegetables Procurement	2	Assessment of Fruits and Vegetables drying/Dehydration technician	

Assessor Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Fruits and Vegetables drying/Dehydration technician" mapped to QP: "FIC/Q0105, v1.0". Minimum accepted score is 80%	Recommended that the Assessor is certified for the Job Role: "Assessor", mapped to the Qualification Pack: "MEP/Q2701". Minimum accepted score as per MEPSC guidelines is 80%.

Assessment Strategy

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

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. 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 Pac

References

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
NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
CIP	Clean In Place
COP	Clean Out Of Place
ERP	Enterprise Resource Planning
FIFO	First In First Out
EFO	First Expiry First Out
FSSAI	Food Safety and Standards Authority of India
GMP	Good Manufacturing Practice
GHP	Good Hygiene Practices
HACCP	Hazard Analysis and Critical Control Point
NOS	National Occupational Standard
NSQF	National Skill Qualification Framework
NVEQF	National Vocational Educational Qualification Framework
NVQF	National Vocational Qualification Framework
OS	Occupational Standard
PC	Performance Criteria
QP	Qualification Pack
SSC	Sector Skill Council
SOP	Standard Operating Procedure
QMS	Quality Management System