

NATIONAL EDUCATION POLICY- 2020

**Common Minimum Syllabus for all
Uttarakhand**

State Universities and Colleges



**Syllabus Proposed
2023-24**

**Sri Dev Suman Uttarakhand University
Badshahithol, Tehri (Garhwal)**

पाठ्यक्रम निर्माण समिति, उत्तराखण्ड
Curriculum Design Committee, Uttarakhand

क्र० सं०	नाम एवं पद	
1	प्रो० एन० के० जोशी कुलपति, श्रीदेव सुमन उत्तराखण्ड विश्वविद्यालय, टिहरी	अध्यक्ष
2	कुलपति, कुमाऊँ विश्वविद्यालय, नैनीताल	सदस्य
3	प्रो० जगत सिंह बिष्ट कुलपति, सोबन सिंह जीना विश्वविद्यालय, अल्मोड़ा	सदस्य
4	प्रो० सुरेखा डंगवाल कुलपति, दून विश्वविद्यालय, देहरादून	सदस्य
5	प्रो० ओ० पी० एस० नेगी कुलपति, उत्तराखण्ड मुक्त विश्वविद्यालय, हल्द्वानी	सदस्य
6	प्रो. एम० एस० एम० रावत सलाहकार—रूसा, रूसा निदेशालय, देहरादून	सदस्य
7	प्रो० के० डी० पुरोहित सलाहकार—रूसा, रूसा निदेशालय, देहरादून	सदस्य



Model Curriculum

QP Name: Jam, Jelly and Ketchup Processing Technician

QP Code: FIC/Q0103

QP Version: 2.0

NSQF Level: 3

Model Curriculum Version: 2.0

Food Industry Capacity and Skill Initiative (FICSI) Shriram Bharatiya Kala Kendra (3rd Floor) 1,
Copernicus Marg, New Delhi 110001, Phone: 9711260230

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Training Parameters

Sector	Food Processing
Sub-Sector	Fruits And Vegetables
Occupation	Processing-Fruits and Vegetables
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	NCO-2004/7414.90
Minimum Educational Qualification and Experience	18 years of age 1. Class 10th passed or 2. Class 8th passed and 2 years of relevant experience
Pre-Requisite License or Training	1. Food standards for fruit and vegetable products 2. Method of preservation of fruits and vegetables 3. Handling fruits and vegetables, packaging and storage techniques 4. Quality assessment of raw material, packaging materials and finished products 5. Operation and maintenance of processing machineries and equipment 6. Waste management 7. GMP 8. HACCP 9. QMS 10. Computer basics and ERP system followed by the organization 11. Training in Food Safety Standards and Regulations (as per FSSAI) (Mandatory)
Minimum Job Entry Age	18 years
Last Reviewed On	29-07-2021
Next Review Date	29-07-2024
NSQC Approval Date	29/07/2021
QP Version	2.0
Model Curriculum Creation Date	04-02-2020
Model Curriculum Valid Up to Date	29-07-2024

Model Curriculum Version	2.0
Minimum Duration of the Course	340 hours
Maximum Duration of the Course	340 hours



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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:

- Maintain work area and process machineries to produce jam, jelly and ketchup
- Prepare raw material to produce jam, jelly & ketchup,
- Process fruits and vegetables to produce jam, jelly and ketchup manually or mechanically
- Document and maintain records related to jam, jelly and ketchup processing
- Apply the 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 training program and overview of fruits and vegetables processing industry	06:00 Hours	10:00 Hours	00:00 Hours	00:00 Hours	16:00 Hours
Module 1: Introduction to the training program	02:00 Hours	00:00 Hours	00:00 Hours	00:00 Hours	02:00 Hours
Module 2: Professional and Core Skills	04:00 Hours	10:00 Hours	00:00 Hours	00:00 Hours	14:00 Hours
FIC/N0109 Prepare and maintain work area and process machineries for jam, jelly and ketchup processing NOS Version No.: 1.0 NSQF Level: 3	10:00 Hours	15:00 Hours	00:00 Hours	00:00 Hours	25:00 Hours
Module 3: Prepare work area and equipment for jam, jelly and ketchup processing	10:00 Hours	15:00 Hours	00:00 Hours	00:00 Hours	25:00 Hours
FIC/N0110 Prepare for production of jam, jelly and ketchup NOS Version No.: 1.0 NSQF Level: 3	10:00 Hours	40:00 Hours	00:00 Hours	00:00 Hours	50:00 Hours

Module 4: Prepare for Production of Jam, Jelly and Ketchup	10:00 Hours	40:00 Hours	00:00 Hours	00:00 Hours	50:00 Hours
FIC/N0111 Produce jam, Jelly and ketchup NOS Version No.: 1.0 NSQF Level: 3	35:00 Hours	90:00 Hours	00:00 Hours	00:00 Hours	125:00 Hours
Module 5: Carry out production of jam, jelly and ketchup as per production needs	25:00 Hours	80:00 Hours	00:00 Hours	00:00 Hours	105:00 Hours
Module 6: Organizational Standards and Norms	10:00 Hours	10:00 Hours	00:00 Hours	00:00 Hours	20:00 Hours
FIC/N0112 Complete documentation and record keeping related to production of jam, jelly and ketchup NOS Version No.: 1.0 NSQF Level: 3	14:00 Hours	25:00 Hours	00:00 Hours	00:00 Hours	39:00 Hours
Module 7: Complete documentation and record keeping related to production of jam, jelly and ketchup	08:00 Hours	11:00 Hours	00:00 Hours	00:00 Hours	19:00 Hours
Module 8: IT Orientation	06:00 Hours	14:00 Hours	00:00 Hours	00:00 Hours	20:00 Hours
FIC/N9001 Food safety, hygiene and sanitation for processing food products NOS Version No.: 1.0 NSQF Level: 3	15:00 Hours	30:00 Hours	00:00 Hours	00:00 Hours	45:00 Hours
Module 9: Food safety, hygiene and sanitation for processing food products	15:00 Hours	30:00 Hours	00:00 Hours	00:00 Hours	45:00 Hours
Employability and Entrepreneurship skills	28:00 Hours	12:00 Hours	00:00 Hours	00:00 Hours	40:00 Hours
Module 10: Employability and Entrepreneurship skills	28:00 Hours	12:00 Hours	00:00 Hours	00:00 Hours	40:00 Hours
Total Duration	118:00 Hours	222:00 Hours	00:00 Hours	00:00 Hours	340:00 Hours

Module Details

Module 1: Introduction to training program and overview of fruits and vegetables processing industry

Bridge Module

Terminal Outcomes:

- Discuss the food processing industry in brief
- List the opportunities available to jam, jelly and ketchup processing technicians in the food industry

Duration: 02:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Define food processing. • List the various sub sectors of food processing industry. • Discuss the opportunities available to fruits and vegetables processing technicians in the food industry. • Explain different types of fruits and vegetables processing. • Explain the need for processing of fruits and vegetables. • List the various units within a fruits and vegetables processing unit. • Explain the methods of testing fruits and vegetables 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: 04:00	Duration: 10:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Identify personal strengths and weaknesses. • Discuss the importance of work order in the process. • Explain the importance of decision making in the job. • Explain the importance of communicating effectively. 	<ul style="list-style-type: none"> • Apply standard practice to undertake a self-assessment test for identifying strengths and weaknesses. <ul style="list-style-type: none"> • 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 and maintain work area and process machineries for jam, jelly and ketchup processing

Mapped to FIC/N0109, v 1.0

Terminal Outcomes:

- Prepare work area and process machineries to produce jam, jelly & ketchup

Duration: 10:00	Duration: 15:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • List the materials and equipment used in the cleaning and maintenance of the work area. • List the common detergents and sanitizers used in cleaning work area and machineries. • Explain the methods of cleaning and sanitization. • Describe the functions to be carried out before starting production. • List the different types of maintenance procedures. 	<ul style="list-style-type: none"> • Perform the process of preparing the work area for scheduled production. • Conduct minor repairs and faults in process machineries. • Prepare the machines and tools required for production.
Classroom Aids	
Board/Chart paper/ Laptop and Projector, Trainer Handbook, Participant handbook, etc	
Tools, Equipment and Other Requirements	
Fruit Washer, Peeler, Fruit Pulper , Juice Extractor, Clarifier, Filter, Pasteurizer, Steam Jacketed Kettles, Packaging Machines, Protective Gloves, Head Caps, Lab Coat, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer	

Module 4: Prepare for production of jam, jelly and ketchup

Mapped to FIC/N0110, v 1.0

Terminal Outcomes:

- Prepare raw material to produce jam, jelly & ketchup

Duration: 10:00	Duration: 40:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the process for planning of the batch size. 	<ul style="list-style-type: none"> • Demonstrate how to plan the production process • Demonstrate how to calculate the process time for effective utilization of machineries • Perform production planning for effective utilization of raw material and machineries • Identify the raw material, machineries and packaging material requirement. • Check the performance of all equipment. • Check the conformance of raw material to the industry standards. • Demonstrate the weighing of raw materials. • Explain how to plan batch size considering full capacity utilization of equipment • Demonstrate the calculation of raw material required for getting desired quantity of finished product
• Classroom Aids	
Board/Chart paper/ Laptop and Projector, Trainer Handbook, Participant handbook, etc	
Tools, Equipment and Other Requirements	
Fruit Washer, Peeler, Fruit Pulper , Juice Extractor, Clarifier, Filter, Pasteurizer, Steam Jacketed Kettles, Packaging Machines, Protective Gloves, Head Caps, Lab Coat, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer	

Module 5: Produce Jam, Jelly and Ketchup

Mapped to FIC/N0111, v 1.0

Terminal Outcomes:

- Discuss the stages involved in the production of jam, jelly and ketchup
- Demonstrate the tasks to be performed for producing jam, jelly and ketchup

Duration: 25:00	Duration: 80:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss how to check the quality of fruits and vegetables. 	<ul style="list-style-type: none"> • Perform a check if all the machineries are clean and in good working conditions. • Demonstrate assembling of all components of machines. • Perform a pre check on all machineries. • Check the quality of fruits and vegetables Perform the washing of fruits and vegetables before they go for processing. • Perform pulping and juice extraction from fruits and vegetables. • Demonstrate the technique/ process of preparation of jam/ jelly/ ketchup. • Demonstrate the packaging and analyze the quality of the finished product . • 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	
Board/Chart paper/ Laptop and Projector, Trainer Handbook, Participant handbook, etc.	
Tools, Equipment and Other Requirements	
Fruit Washer, Peeler, Fruit Pulper , Juice Extractor, Clarifier, Filter, Pasteurizer, Steam Jacketed Kettles, Packaging Machines, Protective Gloves, Head Caps, Lab Coat, Safety Goggles, Safety Boots, Mouth Masks, sanitizer	

Module 6: Organizational Standards and Norms Mapped to FIC/N0111, v 1.0

Terminal Outcomes:

- Apply the principles of food safety and hygiene in the work environment

Duration: 10:00	Duration: 10:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • List the roles and responsibilities of a jam, jelly and ketchup processing technician. • Discuss how to conduct yourself at the workplace. 	<ul style="list-style-type: none"> • Apply personal hygiene and sanitation guidelines. • Apply food safety hygiene standards in the work environment.
Classroom Aids	
Board/Chart paper/ Laptop and Projector, Trainer Handbook, Participant handbook, etc	
Tools, Equipment and Other Requirements	
Protective Gloves, Head Caps, Lab Coat, Safety Goggles, Safety Boots, Mouth Masks, Sanitizer	

Module 7: Complete documentation and record keeping related to production of jam, jelly and ketchup

Mapped to FIC/N0112, v 1.0

Terminal Outcomes:

- Document and maintain records related to jam, jelly & ketchup processing

Duration: 08:00	Duration: 11:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> Explain the need for documenting and maintaining records of raw materials, processes and finished products. Discuss 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 product.
Classroom Aids	
Board/Chart paper/ Laptop and Projector, Trainer Handbook, Participant handbook, etc	
Tools, Equipment and Other Requirements	
Food Safety Manual, Log Books, Computer/Laptop	

Module 8: IT orientation

Mapped to FIC/N0112, 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: 14:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • 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"> • 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, v 1.0

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: 30:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the importance of safety, hygiene and sanitation in the production of jam, jelly and ketchup industry • Discuss the method of documenting and recording the details of raw material to final finished product 	<ul style="list-style-type: none"> • Apply the industry standards to maintain a safe and hygiene workplace • Apply HACCP principles to eliminate food safety hazards in the process and products • Apply safety practices in the work area
Classroom Aids	
Food Safety Manual, Log Books, etc.	
Tools, Equipment and Other Requirements	
Protective Gloves, Head Caps, Aprons, Safety Goggles, Safety Boots, Mouth Covers, Sanitizer	

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	
Diploma	Food Tech or Food Engineering	3	Hands on experience in Jam ,Jelly and Ketchup Making Unit or Fruits/Vegetables Processing unit	1	Training of Jam ,Jelly and Ketchup Making Technician	
B. Sc./B. Tech/BE	Food Technology or Food Engineering	2	Hands on experience in Jam ,Jelly and Ketchup Making Unit or Fruits/Vegetables Processing unit	1	Training of Jam ,Jelly and Ketchup Making Technician	

Trainer Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Jam, Jelly and Ketchup Processing Technician" mapped to QP: "FIC/Q0103, v1.0". Minimum accepted score is 80%	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 FICSI guidelines

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
Diploma	Food Tech or Food Engineering	4	Jam ,Jelly and Ketchup Making	1	Assessment of Jam ,Jelly and Ketchup Making technicians	
B. Sc./B. Tech/BE	Food Technology or Food Engineering	2	Jam ,Jelly and Ketchup Making	1	Assessment of Jam ,Jelly and Ketchup Making technicians	

Assessor Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Jam, Jelly and Ketchup processing technician" mapped to QP: "FIC/Q5005, 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 Pack.

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
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
NVEQF	National Vocational Educational Qualification Framework
NVQF	National Vocational Qualification Framework
OS	Occupational Standard
PC	Performance Criteria
SSC	Sector Skill Council
SOP	Standard Operating Procedure
QMS	Quality Management System