**APPRENTICESHIP CURRICULUM (OPTIONAL TRADE)**

**Food Processing**

**Assistant Lab Technician-Food & Agriculture Commodities**

**Course Code:**

**NAPS Non-NAPS**

**NSQF Level: 3**

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# Course Details

|  |  |  |
| --- | --- | --- |
|  | **Course Name** | **Assistant Lab Technician-Food & Agriculture Commodities** |
|  | **Course Code** |  |
|  | **Apprenticeship Training Duration:**  *(2 to 4 weeks of BT is embedded in this duration as per the requirement of the establishment)* | **Months: 12** |
| **Remarks** |  |
|  | **Credit** | **40** |
|  | **NSQF Level** (*Mandatory for NAPS*) | 3 **NSQC Approval Date: 27th Aug. 2024** |
|  | **Related NSQF-aligned qualification details** | |  |  |  |  | | --- | --- | --- | --- | | **S. No.** | **QP/ Qualification/ NOS Name (As applicable)** | **QP/ NOS Code & Version** | **NQR Code** | | 1. | Assistant Lab Technician-Food & Agriculture Commodities | FIC/Q7601  Version 3.0 | QG-03-FI-02931-2024-V2-FICSI | |  |  |  |  | |
|  | **Brief Job Role Description** | An Assistant Lab Technician - Food and Agricultural Commodities is responsible for ensuring quality products by sampling raw materials, packaging materials, ﬁnished products, and shelf-life samples for quantitative and qualitative analysis. They are also responsible for maintaining the inventory and upkeep of the resources and documentation of the entire process. They should be familiar with operating the instruments and troubleshooting and repairing the minor issues that arise while working with these instruments. |
|  | **NCO-2015 Code & Occupation** (*Access the NCO 2015 volumes from:* [*https://labour.gov.in/organizationsofmole/directorate-general-employment-training-dget*](https://labour.gov.in/organizationsofmole/directorate-general-employment-training-dget) ) | NCO-2015/3116.20, Quality Analysis/ Assurance |
|  | **Minimum Eligibility Criteria**  *(Educational and/ or Technical Qualification)* | Grade 10 pass & Equivalent  • Grade 8 pass with three years of relevant experience in Food Industry/Lab  • Previous relevant Qualification of NSQF Level 2.5 – 1.5 year experience  • Previous relevant Qualification of NSQF Level 2 – 3 year relevant experience |
|  | **Entry Age for Apprenticeship** | 16 Years |
|  | **Any Licensing Requirements** (*wherever applicable*) | NA |
|  | **Is the Job Role amenable to Persons with Disability** | **Yes  No**  **If yes, check the applicable type of Disability**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Locomotor Disability** | **Leprosy Cured Person** | **Cerebral Palsy** | **Dwarfism** | **Muscular Dystrophy** | | **Acid Attack Victims** | **Blindness** | **Low Vision** | **Deaf** | **Hard of Hearing** | | **Speech and Language Disability** | **Intellectual Disability** | **Specific Learning Disabilities** | **Autism Spectrum Disorder** | **Mental Illness** | | **Multiple Sclerosis** | **Parkinson's Disease** | **Haemophilia** | **Thalassemia** | **Sickle Cell Disease** | | **Multiple Disabilities** |  |  |  |  | |  | |
| **Remarks:** |
|  | **Submitting Body Details** | **Name: Food Industry Capacity and Skill Initiative**  **E-mail ID: ceo@ficsi.in**  **Contact Number:9711260230** |
|  | **Certifying Body** | Food Industry Capacity and Skill Initiative |
|  | **Employment Avenues/Opportunities** | A candidate after successful completion of the course may have the opportunity to work in the food processing industry. |
|  | **Career Progression** | The person after gaining experience further can work as a Food Sampler (NSQF Level 3.5) |
|  | **Trainer’s Qualification & Experience:** | * B.Sc or graduate/B.Tech/BE in Food technology or food engineering with 3 years of industry and 1 year of training experience in the food processing industry or Testing Laboratory * M.Sc/M.Tech/ME in Food technology or food engineering with 2 years of industry and 1 year of training experience in the food processing industry or Testing Laboratory * Diploma /certificate course in Food Technology / Food Engineering /packaging/Home Science/ Microbiology/Biotechnology or allied sector with 4 years of industry and 1 year of training experience in the food processing industry or Testing Laboratory |
|  | **Curriculum Creation Date** | 13-0-2025 |
|  | **Curriculum Valid up to Date** | 26/08/2027 |

# Module Details

| **S. No** | **Module/NOS Name, Code, Version** | **Outcomes** | **Assessment Marks** | | **Passing Percentage** | |
| --- | --- | --- | --- | --- | --- | --- |
| **Th.** | **Pr.** | **Th.** | **Pr.** |
|  | FIC/N7627 Prepare the lab for testing samples  NOS Version No.: 2.0  NSQF Level: 3.5 | * Discuss the key roles and responsibilities of an “Assistant Lab Technician-Food & Agriculture Commodities”. * Discuss the career options for an Assistant Lab Technician-Food & Agriculture Commodities” * List the sequence of tasks performed by lab technicians in the food industry * Demonstrate equipment used in the food testing labs * Demonstrate how to clean the work area and lab equipment to prepare for testing with the approved sanitizers and cleaning agents * Show how to clean and sterilize glassware used in the lab * Display the procedure to rectify faults and minor repairs in lab equipment/apparatus. * Enumerate the essential supplies needed for lab operations * Explain the criteria for examining the physical conditions of the samples received. * Demonstrate the process of receiving samples and various checks * Demonstrate inventory management using the software * Show how to maintain the tools and machines/apparatus utilized for testing. * Demonstrate the lab and personal safety protocols * Discuss the importance of the collection details on the samples and verify them * Discuss the storage environment and the storage parameters for the samples collected * Discuss the various visual inspection techniques and parameters. | 34 | 41+25 | 50% | 50% |
|  | FIC/N7603 Perform Basic Sampling and Perform day-to-day lab activities  NOS Version No: 2.0  NSQF Level: 3 | * Describe how to read and understand the sampling instructions from the lab technician from respective sources, such as customers, enterprises, etc. * Explain and discuss different types of samples like control samples, shelf life samples, process control samples, environmental samples, sensory evaluation samples, etc. * Demonstrate the process of categorizing the sample as per their nature * Demonstrate the method of collecting samples from a different department * Demonstrate the techniques of entering sample details in the lab register * Demonstrate the labelling techniques * Disucss the various mandatory labelling items to be included namely sample name, date and time of sampling, batch/manufacture /expiry details * Demonstrate the steps to enter sample details in the lab register * Explain the importance of transferring the control sample and shelf life sample to the designated area * Discuss the importance of storing samples at a suitable temperature * Explain procedure for preparation of all reagents required for analysis of raw materials, packaging materials and finished productsExplain the frequency of the reagents produced * Discuss the Standard operating procedure for analysing the samples * Discuss how the analyse the sample using the calibrated equipment * Discuss the various steps in the waste disposal process and the documentation process * Demonstrate the waste removal techniques * Explain and discuss the different types of physical tests that are done on the packaging material. * Demonstrate the process of physical inspection of food samples and packaging materials. * Demonstrate how to perform the test for packaging materials checking the printed matter and comparing with standard, checking the strength of cartons, etc for all samples collected * Demonstrate the documentation of the whole sampling procedure * Demonstrate inventory management using ERP. * Demonstrate the steps to enter the results of sampling in the ERP * Practice the CIP and COP cleaning techniques * Demonstrate the chemical analysis steps | 33 | 46+21 | 50% | 50% |
|  | FIC/N9907 Apply food safety and Maintain hygiene in the laboratory NOS Version No.:2.0  NSQF Level:3.5 | * Discuss the food borne illness and the medical examination * Discuss the latest updates in food safety regulations * Discuss Material Safety Data Sheet(MSDS) and explain why is it essential in the food lab * Create sample MSDS * Explain contamination and degradation and explain why it is important to follow proper procedures for the collection, labeling, and storage of biological samples and to prevent contamination and degradation. * Discuss how to segregate waste according to type (biological, chemical, sharps, general) and dispose of it in designated labeled bins * Explain cross-contamination and measures to prevent it in samples * Discuss the storage procedures adopted in the organization considering the temperature and humidity factors * Discuss the features of Good Laboratory Practices (GLP) to ensure high-quality and reliable lab results * Explain the NABL and its functions * Discuss the FSSAI guidelines for food labs * Discuss the Good hygiene practices while handling food samples * Discuss food allergens and their management * Discuss the minor issues of the working equipment and troubleshooting techniques * Explain the importance of audits and discuss the documentation and record keeping mechanisms | 14 | 18+15 | 50% | 50% |
|  | DGT/VSQ/N0101: Employability Skills | * Discuss 21st-century skills. * Display a positive attitude, self-motivation, problem-solving, time management skills, and continuous learning mindset in different situations. * Discuss the significance of reporting sexual harassment issues in time * Discuss the significance of using financial products and services safely and securely. * Explain the importance of managing expenses, income, and savings. * Discuss the significance of using the internet for browsing, and accessing social media platforms, safely and securely * Discuss the need for identifying opportunities for potential business, sources for arranging money, and potential legal and financial challenges * Discuss the significance of maintaining hygiene and dressing appropriately * Discuss the significance of dressing up neatly and maintaining hygiene for an interview * List the information to be recorded in the work process | 20 | 30 | 50% | 50% |
|  | **Total Marks** | | 104 | 135+61 | 50% | 50% |

# Glossary

|  |  |
| --- | --- |
| **Term** | **Description** |
| 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 | On-the-job training trainees are mandated to complete specified hours of training on site |

# Acronyms

|  |  |
| --- | --- |
| **Acronym** | **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 |

# Annexure 1: Tools and Equipment

## List of Tools and Equipment

The tools and equipment required are:

|  |  |
| --- | --- |
| Equipment Name | Quantity |
| Test Tubes | 1 |
| Round Bottom Flasks | 2 |
| Bunsen Burner | 1 |
| Mortar And Pestle | 1 |
| Funnels | 30 |
| Gloves | 30 |
| Masks | 30 |
| Lab coats | 30 |
| Vernier Callipers | 30 |
| Beakers | 30 |
| Conical Flasks | 1 |
| Hot Air Oven | 1 |
| pH Metre | 1 |
| Moisture Metre | 1 |
| Laboratory Round Heating Plate | 1 |
| Water Bath | 1 |
| Glass Rod/ Stirrer | 1 |
| Filter Paper | 1 |
| Burette with stand | 30 |
| Pipette | 30 |
| Titration Flask | 1 |
| Measuring Cylinder | 1 |
| Petri dish | 1 |
| Spatula | 1 |
| Knife | 1 |
| Autoclave | 1 |
| B.O.D Incubator | 1 |
| Kjeldahl Digestion Unit | 1 |
| Laminar Air Flow | 1 |
| Microscope | 1 |
| Muffle Furnace | 1 |
| Weighing Balance | 1 |

## Classroom Aids

The aids required to conduct sessions in the classroom are:

1. Projector
2. Computer/laptops
3. Internet connectivity
4. Whiteboard
5. Participant Handbook
6. Facilitator Guide

# Annexure 2: Assessment Strategy

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

1. Weekly Quizzes and practicals will be recorded, and evidence maintained in terms of exercise papers and answer papers.
2. Monthly reports for each trainee by the Trainer/ Supervisor. They shall be recorded by each trainer. These will be in terms of description derived from the marks obtained during weekly quizzes and practical/ exercises.
3. Consolidated 3rd party assessment along with Industry where employed as apprentices after basic training as well as after OJT.
4. Consolidated assessment after the apprenticeship period jointly with Industry. 3rd Party shall also be involved.
5. This consolidated assessment shall also have its theory, practical, and viva voce components.
6. Their evidence and records shall be maintained, and results promulgated to all the stakeholders The assessment will be conducted by giving on-the-job tasks to the candidates.
7. To pass, every trainee should score a minimum of 50% of aggregate marks to successfully clear the assessment.
8. In case of unsuccessful completion, the trainee may seek reassessment

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# Annexure 3: Mode of Training

The following Modules/NOS may also be delivered online for which the resources are provided in the given table.

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Module Name/NOS Name (As Per Curriculum)** | **Name of Mapped Online Component** | **URL of Mapped Online Component** |
|  |  |  |  |
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**Infra requirement:**