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

**COMPETENCY BASED CURRICULUM**

# FOOD BEVERAGE

**(Duration: One Year)**
**Revised in July**

## CRAFTSMEN TRAINING SCHEME (CTS)

**NSQF LEVEL- 3**

## SECTOR –FOOD INDUSTRY

Directorate General of Training

# FOOD BEVERAGE

**(Non-Engineering Trade)**

**(Revised in July 2022)**

**Version: 2.0**

## CRAFTSMEN TRAINING SCHEME (CTS)

## NSQF LEVEL - 3

Developed By

Ministry of Skill Development and Entrepreneurship

Directorate General of Training

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# 1. COURSE INFORMATION

During the one-year duration of 'Food Beverage' trade, a candidate is trained on Professional Skill, Professional Knowledge and Employability Skill related to the job role. In addition to this, a candidate is entrusted to undertake project work, extracurricular activities and on-the-job training to build up confidence. The broad components covered under Professional Skill subject are as below:

The trainee is trained to prepare fruit juices with juice extracting/ pulping machines with safety precautions and preserve fruit juices with addition of preservatives and determine the acidity and TSS content; prepare and pack various type of flavoured milk by using appropriate machines/tools such as homogenizer, autoclave, bottle washer, liquid/bottle filling machine & corking machine with safety precautions and determine the quality of flavoured milk. The trainees also learn to prepare mineral water by using appropriate machines such as mini water plant and explain quality standards (BIS) of water and water treatment process; explain various types of packaging material used in packaging of food beverages products and storage; prepare and pack synthetic beverages such as soft drink by using appropriate machines such as, carbonation machines, autoclave, bottle washer, liquid/bottle filling machine and corking machine with safety precautions, determine the acidity, TSS content , pH value and Sensory evaluation.

The trainee also learns to prepare and pack fermented beverages such as vinegar, fermented juices and lassi by using appropriate machines/ tools such as, fermenter, seed germinator, vinegar generator, autoclave, bottle washer, required fermentation agents, liquid/ bottle filling machine, Chemical solutions and corking machine with safety precautions. He determines the acidity, TSS content, pH value and Sensory evaluation. The Trainee practices to prepare and pack fermented beverages such as whiskey, beer, wine, rum and brandy by using appropriate machines/tools such as, fermenter, seed germinator, autoclave, bottle washer, required fermentation agents, liquid/bottle filling machine, Chemical solutions and corking machine with safety precautions and determines the alcohol content, acidity, TSS content, pH value and Sensory evaluation; explain food safety standards and beverage industry waste utilization.

# 2. TRAINING SYSTEM

## 2.1 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 economy/ Labour market. The vocational training programmes are delivered under the aegis of Directorate General of Training (DGT). Craftsman Training Scheme (CTS) with variants and Apprenticeship Training Scheme (ATS) are two pioneer schemes of DGT for strengthening vocational training.

Food Beverage trade under CTS is one of the popular courses delivered nationwide through a network of ITIs. The course is of one year duration. It mainly consists of Domain area and Core area. The Domain area (Trade Theory & Practical) imparts professional skills and knowledge, while the core area (Employability Skill) imparts requisite core skills, knowledge, and life skills. After passing out the training program, the trainee is awarded National Trade Certificate (NTC) by DGT which is recognized worldwide.

### Candidates broadly need to demonstrate that they are able to:

- Read and interpret parameters/documents, plan and organize work processes, identify necessary materials and tools;
- Perform tasks with due consideration to safety rules, accident prevention regulations and environmental protection stipulations;
- Apply professional skill, knowledge & employability skills while performing jobs.
- Document the parameters related to the task undertaken.

## 2.2 PROGRESSION PATHWAYS

- Can join industry as Technician and will progress further as Senior Technician, Supervisor and can rise up to the level of Manager.
- Can become Entrepreneur in the related field.
- Can join Apprenticeship programs in different types of industries leading to a National Apprenticeship certificate (NAC).
- Can join Crafts Instructor Training Scheme (CITS) in the trade for becoming instructor in ITIs.
- Can join Advanced Diploma (Vocational) courses under DGT as applicable.

## 2.3 COURSE STRUCTURE

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

| S No. | Course Element | Notional Training Hours |
|---|---|---|
| 1. | Professional Skill (Trade Practical) | 840 |
| 2. | Professional Knowledge (Trade Theory) | 240 |
| 3. | Employability Skills | 120 |
| | **Total** | **1200** |

Every year 150 hours of mandatory OJT (On the Job Training) at nearby industry, wherever not available then group project is mandatory.

| | | |
|---|---|---|
| 4 | On the Job Training (OJT) / Group Project | 150 |

Trainees of one-year or two-year trade can also opt for optional courses of up to 240 hours in each year for 10th/ 12th class certificate along with ITI certification, or, add on short term courses.

## 2.4 ASSESSMENT & CERTIFICATION

The trainee will be tested for his skill, knowledge and attitude during the period of course through formative assessment and at the end of the training programme through summative assessment as notified by the DGT from time to time.

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. The marks of internal assessment will be as per the formative assessment template provided on www.bharatskills.gov.in

b) The final assessment will be in the form of summative assessment method. The All India Trade Test for awarding NTC will be conducted by Controller of examinations, DGT as per the guidelines. 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. The examiner during final examination will also check the individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

### 2.4.1 PASS REGULATION

For the purposes of determining the overall result, weightage of 100% is applied for six months and one year duration courses and 50% weightage is applied to each examination for two years courses. The minimum pass percent for Trade Practical and Formative assessment is 60% & for all other subjects is 33%.

## 2.4.2 ASSESSMENT GUIDELINE

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking the assessment. Due consideration should be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scrap/waste as per procedure, behavioral attitude, sensitivity to the environment and regularity in training. The sensitivity towards OSHE and self-learning attitude are to be considered while assessing competency.

Assessment will be evidence based comprising some of the following:

- Job carried out in labs/workshop
- Record book/ daily diary
- Answer sheet of assessment
- Viva-voce
- Progress chart
- Attendance and punctuality
- Assignment
- Project work
- Computer based multiple choice question examination
- Practical Examination

Evidences and records of internal (Formative) assessments are to be preserved until forthcoming examination for audit and verification by examining body. The following marking pattern to be adopted for formative assessment:

| Performance Level | Evidence |
|---|---|
| (a) Marks in the range of 60%-75% to be allotted during assessment | |
| For performance in this grade, the candidate should produce work which demonstrates attainment of an acceptable standard of craftsmanship with occasional guidance, and due regard for safety procedures and practices | • Demonstration of good skills and accuracy in the field of work/ assignments.<br>• A fairly good level of neatness and consistency to accomplish job activities.<br>• Occasional support in completing the task/ job. |

| | |
|---|---|
| (b) Marks in the range of 75%-90% to be allotted during assessment | |
| For this grade, a candidate should produce work which demonstrates attainment of a reasonable standard of craftsmanship, with little guidance, and regard for safety procedures and practices | • Good skill levels and accuracy in the field of work/ assignments.<br>• A good level of neatness and consistency to accomplish job activities.<br>• Little support in completing the task/job. |
| (c) Marks in the range of more than 90% to be allotted during assessment | |
| For performance in this grade, the candidate, with minimal or no support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship. | • High skill levels and accuracy in the field of work/ assignments.<br>• A high level of neatness and consistency to accomplish job activities.<br>• Minimal or no support in completing the task/ job. |

# 3. JOB ROLE

**Chemist, Food**: Chemist, Food conducts research and analysis concerning chemistry of foods to develop and improve food and beverages. Experiments with natural and synthetic materials or by-products to develop new foods, additives, preservatives, anti-adulteration agents, and related products. Studies effects of various methods of processing, preservation, and packaging on composition and properties of food, such as color, texture, aroma, taste, shelf life, and nutritive content. Tests food and beverage samples, such as starch, sugar, cereals, beer, canned and dehydrated food products, meats, vegetables, dairy foods, and other products to ensure compliance with food laws, and standards of quality and purity. May perform, or supervise workers performing, quality control tests in food processing, canning, freezing, brewing or distilling.

**Food and Beverage Tasters and Graders, Other:** Food and Beverages Tasters and Graders, Other include workers who inspect, taste and grade various types of agricultural products, food and beverages not elsewhere classified.

**Laboratory Assistant, Food and Beverages/Chemist/Analytical Supervisor/Lab Chemist:**
Laboratory Assistant, Food and Beverages sets equipment and apparatus and conducts routine test of food, drinks and other edible in laboratory to determine their properties, nutritional value, alcoholic contents etc. and to ensure that they conform to prescribed standards or have not been adulterated. Sets and operates required apparatus such as heaters, hydrometers, thermostats, vacuum pumps etc. depending on nature of test and type of material to be tested such as edibles, butter, milk, cold drinks etc. Performs routine tests of food, beverages, drinks and edibles by chemical processes for determining melting points, specific gravity, boiling point, reaction with chemicals and other factors as directed by Chemists or Food Technologist to find their properties, nutritional value, alcoholic contents etc. Ensures that food and beverages tested conform to prescribed standards, as stated on labels. Reports cases of adulteration, fermentation, putrefaction etc. to senior officers. Washes and cleans apparatus, keeps them in safe custody and maintains records as necessary. Keeps laboratory clean and tidy. May prepare standard solution regents and other testing media.

**Reference NCO-2015:**

a) 2131.1400 – Chemist, Food
b) 7515.9900 – Food and Beverage Tasters and Graders, Other
c) 3116.0200 – Laboratory Assistant, Food and Beverages/Chemist/Analytical Supervisor/Lab Chemist

**Reference NOS**:

a) FIC/N0103
b) FIC/N2003
c) FIC/N7003
d) FIC/N2002
e) FIC/N9001

# 4. GENERAL INFORMATION

| | |
|---|---|
| **Name of the Trade** | **FOOD BEVERAGE** |
| **Trade Code** | DGT/1069 |
| **NCO - 2015** | 2131.1400; 7515.9900; 3116.0200 |
| **NOS Covered** | FIC/N0103, FIC/N2003, FIC/N7003, FIC/N2002, FIC/N9001 |
| **NSQF Level** | Level 3 |
| **Duration of Craftsmen Training** | One Year (1200 Hours+150 hours OJT/Group Project) |
| **Entry Qualification** | Passed 10th class examination with Science and Mathematics or with vocational subject in same sector or its equivalent. |
| **Minimum Age** | 14 years as on first day of academic session. |
| **Eligibility for PwD** | LD, CP LC, DW, AA, LV, HH, DEAF, AUTISM, SLD, ID |
| **Unit Strength (No. of Student)** | 24(There is no separate provision of supernumerary seats) |
| **Space Norms** | 96 Sq. m |
| **Power Norms** | 6 KW |
| **Instructors Qualification for:** | |
| **(i) Food Beverage Trade** | B.Voc/Degree in Food Technology from UGC recognized university/ college with one year experience in relevant industry.<br>**OR**<br>Diploma (Minimum 2 Years) in Food Technology form recognized board of education or relevant Advanced Diploma (Vocational) from DGT with two years' experience in relevant industry.<br>**OR**<br>NTC/NAC passed in the trade of "Food Beverage" with three years experience in relevant field.<br><br>**<u>Essential Qualification</u>:**<br>Relevant Regular / RPL variants of National Craft Instructor Certificate (NCIC) under DGT.<br><br>***Note:-*Out of two Instructors required for the unit of 2(1+1), one must have Diploma, and other must have NTC/NAC qualifications. *However, both of them must possess NCIC in any of its variants.*** |
| **(ii) Employability Skill** | MBA/ BBA / Any Graduate/ Diploma in any discipline with Two years' |

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| | experience with short term ToT Course in Employability Skills.<br>(Must have studied English/ Communication Skills and Basic Computer at 12th / Diploma level and above)<br>**OR**<br>Existing Social Studies Instructors in ITIs with short term ToT Course in Employability Skills. |
| **(iii) Minimum Age for Instructor** | 21 Years |
| **List of Tools and Equipment** | As per Annexure – I |
| | |

# 5. LEARNING OUTCOME

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

## 5.1LEARNING OUTCOMES (TRADE SPECIFIC)

1. Prepare fruit juices with juice extracting/ pulping machines with safety precautions and preserve fruit juices with addition of preservatives and determine the acidity and TSS content following safety precautions.(NOS: FIC/N0103)
2. Prepare and pack various type of flavoured milk by using appropriate machines/tools such as homogenizer, autoclave, bottle washer, liquid/bottle filling machine and corking machine with safety precautions, determine the quality of flavoured milk.(NOS: FIC/N2003)
3. Prepare mineral water by using appropriate machines such as mini water plant and explain quality standards (BIS) of water and water treatment process.(NOS:FIC/N9403)
4. Explain various types of packaging material used in packaging of food beverages products and storage.(NOS:FIC/N7003)
5. Prepare and pack synthetic beverages such as soft drink by using appropriate machines such as, carbonation machines, autoclave, bottle washer, liquid/bottle filling machine and corking machine with safety precautions, determine the acidity, TSS content , pH value and Sensory evaluation. (NOS:FIC/N9404)
6. Prepare and pack fermented beverages such as vinegar, fermented juices and lassi by using appropriate machines/ tools. (NOS:FIC/N2003)
7. such as, Fermenter, seed germinator, vinegar generator, autoclave, bottle washer, required fermentation agents, liquid/ bottle filling machine, Chemical solutions and corking machine with safety precautions, determine the acidity, TSS content , pH value and Sensory evaluation.(NOS:FIC/N2003)
8. Prepare and pack fermented beverages such as whiskey, beer, wine, rum and brandy by using appropriate machines/tools such as, Fermenter, seed germinator, autoclave, bottle washer, required fermentation agents, liquid/bottle filling machine, Chemical solutions and corking machine with safety precautions, determine the alcohol content, acidity, TSS content , pH value and Sensory evaluation.(NOS:FIC/N2002)
9. Explain food safety standards and beverage industry waste utilization.(NOS:FIC/N9001)

# 6. ASSESSMENT CRITERIA

| LEARNING OUTCOMES | ASSESSMENT CRITERIA |
|---|---|
| 1. Prepare fruit juices with juice extracting/pulping machines with safety precautions and preserve fruit juices with addition of preservatives and determine the acidity and TSS content following safety precautions. (NOS: FIC/N0103) | Maintain the perfect hygiene standard |
| | Select perfect fruits and other ingredients |
| | Prepare fruits for juice |
| | wash fruits. |
| | Prepare fruits juice |
| | Measure juice |
| | Determine TSS |
| | Determine acidity |
| | Perform calculation |
| | Fill the preserved fruit juices in sterilized bottles |
| | Cork and crown the bottles |
| | Sterilize the bottles |
| | Label the bottles |
| | Maintain safety |
| | |
| 2. Prepare and pack various type of flavoured milk by using appropriate machines/tools such as homogenizer, autoclave, bottle washer, liquid/bottle filling machine and corking machine with safety precautions, determine the quality of flavoured milk. (NOS: FIC/N2003) | Maintain perfect hygiene standard. |
| | Describe the nutritional & energy values and quality standards of flavoured milk. |
| | Select ingredients and machines. |
| | Prepare flavoured milk. |
| | Check the quality such TSS, pH, Acidity. |
| | Fill beverage into sterilized bottles. |
| | Cork and crown the bottles. |
| | Label the bottle. |
| | Maintain safety. |
| | |
| 3. Prepare mineral water by using appropriate | Maintain perfect hygiene standard |
| | Describe standard of water and types of water hardness. |

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| machines such as mini water plant and explain quality standards (BIS) of water and water treatment process. (NOS:FIC/N9403) | Describe temporary water treatment process. |
| | Explain types of water treatment like R.O., U.V. treatment. |
| | Explain production of mineral water. |
| | Production of mineral water. |
| | Maintain safety |
| | |
| 4. Explain various types of packaging material used in packaging of food beverages products and storage. (NOS:FIC/N7003) | Explain types of packaging material like glass container, tin container, PET bottle, plastic pouches, tetra pack and brick packs. |
| | Functions of packaging materials. |
| | Explain merits and demerits of various types packaging material. |
| | Storage condition of packed products. |
| | |
| 5. Prepare and pack synthetic beverages such as soft drink by using appropriate machines such as, carbonation machines, autoclave, bottle washer, liquid/bottle filling machine and corking machine with safety precautions, determine the acidity, TSS content, pH value and sensory evaluation. (NOS:FIC/N9404) | Explain manufacturing process of soft drink. |
| | Maintain perfect hygiene standard. |
| | Select ingredients and machines. |
| | Prepare soft drinks by using machines. |
| | Check the quality such TSS, pH, Acidity. |
| | Sensory evaluation |
| | Fill beverage into sterilized bottles |
| | Add carbon dioxide |
| | Cork and crown the bottles |
| | Label the bottle |
| | Maintain safety |
| | |
| 6. Prepare and pack fermented beverages such as vinegar, fermented juices and lassi by using appropriate machines/ tools such as, Fermenter, seed germinator, vinegar | Explain principle of fermentation and process of fermentation. |
| | Explain manufacturing process of vinegar. |
| | Maintain perfect hygiene standard |
| | Select ingredients and machines |
| | Prepare vinegar and fermented juices by using machines |
| | Check the quality such TSS, pH, Acidity |
| | Sensory evaluation |

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| generator, autoclave, bottle washer, required fermentation agents, liquid/ bottle filling machine, Chemical solutions and corking machine with safety precautions, determine the acidity, TSS content, pH value and Sensory evaluation. (NOS:FIC/N2003) | Fill beverage into sterilized bottles |
| | cork and crown the bottles |
| | Label the bottle |
| | Maintain safety |
| | |
| 7. Prepare and pack fermented beverages such as whiskey, beer, wine, rum and brandy by using appropriate machines/tools such as, Fermenter, seed germinator, autoclave, bottle washer, required fermentation agents, liquid/bottle filling machine, Chemical solutions and corking machine with safety precautions, determine the alcohol content, acidity, TSS content, pH value and Sensory evaluation. (NOS:FIC/N2002) | 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 whiskey, 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 |
| | |
| 8. Explain food safety standards and beverage industry waste utilization. (NOS:FIC/N9001) | State food safety and standard Act 2006 BIS, ISO-22000, HACCP, International food standards. |
| | State Personal Hygiene, cleaning and sanitary standards of beverages industry. |
| | State utilization of food beverage industry waste |

## 7. TRADE SYLLABUS

| SYLLABUS FORFOOD BEVERAGE TRADE | | | |
|---|---|---|---|
| **DURATION: ONE YEAR** | | | |
| **Duration** | **Reference Learning Outcome** | **Professional Skills (Trade Practical) With Indicative Hours** | **Professional Knowledge (Trade Theory)** |
| Professional Skill 225Hrs.;<br><br>Professional Knowledge 72 Hrs | Prepare fruit juices with juice extracting/ pulping machines with safety precautions and preserve fruit juices with addition of preservatives and determine the acidity and TSS content following safety precautions. (Mapped NOS:FIC/N0103) | 1. Study of the different food beverages available in the Market. (30hrs) | **Introduction to different food beverage**<br>• Types of beverages.<br>• Need of particular beverage.<br>• Classification of food beverages.<br>• Raw materials used for beverages.<br>• PFA-standards for food beverages.<br>• Food additives used in different beverages.<br>• Quality of water for beverages.<br>(18 Hrs) |
| | | 2. Operate all equipment safely. (35hrs)<br>3. Identify and removal of faults in machines. (35hrs) | **Primary processing machinery:**<br>• Principle and working of equipment used e.g., Juice extractor, pulper, fermenter, vinegar generator, crown corking machine, bottle filling machine, Soda water machine, basket press, filter press, Maintenance of machines safety. (18 Hrs) |

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| | | 4. Extraction of juice from different fruits. (20hrs)<br>5. Preservation of fruits juices with addition of preservative. (20hrs) | **Juice Extractions :**<br>• Principle and methods for fruits juice manufacture, machinery used in different fruits juice extraction<br>• Preparation process flow charts of juice extraction from various fruits.<br>**Preservative :**<br>• Definition of Preservatives.<br>• Types of preservatives commonly used in food industry.<br>• Limits of usage of preservatives.(12 Hrs) |
| | | 6. Material calculation of Fruit Beverages as per FPO Specification. (25hrs)<br>7. Preparation of common fruit beverages available in the region such as squashes, crushes, cordial, syrups, nectars, R.T.S. beverages. (30hrs)<br>8. Determination of Acids in fruits beverages. (15hrs)<br>9. Determination of TSS with Hand refractometer in fruit Beverage. (15hrs) | **Non Alcoholic Beverages (TEA COFFEE) :**<br>• Type of non alcoholic beverage.<br>• Preparation process and latest development.<br>• Machinery and equipment for non alcoholic beverages.<br>• Process variable and their control.<br>• Nutritional and energy values<br>**Fruit Beverages**<br>• Introduction to different fruits juices.<br>• Raw materials used in fruit beverages, and their properties.<br>• Machinery involved in different fruits juice extraction.<br>• Principle and preparation methods of Ready-To-Serve |

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| | | | (RTS), Squash, fruit juice, nectar, concentrate, syrup, cordial, Process of manufacture.<br>• Quality control in beverage industry.<br>• FPO standards for fruit beverages.(24 Hrs) |
| Professional Skill 45Hrs.;<br><br>Professional Knowledge 12 Hrs. | Prepare and pack various type of flavoured milk by using appropriate machines/tools such as homogenizer, autoclave, bottle washer, liquid/bottle filling machine and corking machine with safety precautions, determine the quality of flavoured milk. (Mapped NOS:FIC/N2003) | 10. Preparation of various flavoured milk beverages. (20hrs)<br>11. Packaging, labelling and storage of flavoured milk. (15hrs)<br>12. Quality of Flavoured milk. (10 hrs) | **Flavoured milk Beverages :**<br>• Raw materials used in flavoured milk beverages, and their properties.<br>• Nutritional and energy values.<br>• Process of manufacture<br>• Quality control(12 Hrs) |
| Professional Skill 130 Hrs;<br><br>Professional Knowledge 36 Hrs | Prepare mineral water by using appropriate machines such as mini water plant and explain quality standards (BIS) of water and water treatment process. (NOS:FIC/N9403) | 13. General purification techniques. (20hrs)<br>14. Production of mineral water from mini water treatment plant. (20hrs)<br>15. Quality of packaged water. (10 hrs) | **Package drinking water :**<br>• Principle and method for production of mineral water.<br>• Quality standard (BIS) of water. Different types of water.<br>(12 Hrs) |
| | | 16. Production of soda water.(20 hrs)<br>17. Packaging, labelling and storage of soda water.(20hrs) | **Soda water :**<br>• Principle and Method of soda water production.<br>• Raw material used in soda water, and their properties.<br>• Quality standards for soda water.(12 Hrs) |
| | | 18. Preparation of malt syrup, | **Miscellaneous Beverage :** |

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| | | badam, pista, herbal, concentrates, rose syrup. (40hrs) | • Beverage from other materials, grains malt, vegetable (tomato), herbs & medicinal plants.(12 Hrs) |
| Professional Skill 30 Hrs;<br><br>Professional Knowledge 12 Hrs | Explain various types of packaging material used in packaging of food beverages products and storage. (Mapped NOS:FIC/N7003) | 19. Practical demonstration of bottle filling machine. (30hrs) | • Study of various types of containers like Glass, Tin- merits and demerits of each- scope for new types of containers/ packaging materials, such as plastic pouches, brick packs, tetra pack, PET bottle and cartons.(12 Hrs) |
| Professional Skill 140 Hrs;<br><br>Professional Knowledge 42 Hrs | Prepare and pack synthetic beverages such as soft drink by using appropriate machines such as, carbonation machines, autoclave, bottle washer, liquid/bottle filling machine and corking machine with safety precautions, determine the acidity, TSS content , pH value and Sensory evaluation. (NOS:FIC/N9404) | 20. Study of the different carbonated and non carbonated, alcoholic and non alcoholic, fermented and unfermented beverages available in the market. (30 hrs)<br>21. Selection of ingredients for soft drink production (30hrs)<br>22. Preparation of different soft drinks.(30hrs)<br>23. Packaging of the soft drinks(PET Bottling, canning) (30 hrs)<br>24. Quality testing in soft drinks. (20 hrs) | **Food beverage**<br>• Importance of food beverages for entrepreneurship.<br>• Scope of food beverages.<br>• Beverages and its importance in modern life.<br>• Industrial growth and development. (15 Hrs)<br>**Synthetic soft drinks :**<br>• Study the role of ingredients used in production of soft drink.<br>• Process of manufacture of soft drinks.<br>• Quality of water for soft drinks.<br>• Study the detail of various water treatment processes.<br>• Food additives used in soft drinks.<br>• Quality control in a soft drink manufacturing industry. (27 Hrs) |

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| Professional Skill 130Hrs;<br><br>Professional Knowledge 30 Hrs | Prepare and pack fermented beverages such as vinegar, fermented juices and lassi by using appropriate machines/ tools such as, Fermenter, seed germinator, vinegar generator, autoclave, bottle washer, required fermentation agents, liquid/ bottle filling machine, Chemical solutions and corking machine with safety precautions, determine the acidity, TSS content , pH value and Sensory evaluation. (Mapped NOS:FIC/N2003 | 25. Preparation of malt extract (20hrs)<br>26. Preparation of cider, vinegar, banana, pineapple beverages. (30hrs)<br>27. Quality testing in fermented beverages. (20hrs)<br>28. Packaging of the fermented beverages. (20hrs)<br>29. Fermentation of Fruits juices. (20hrs)<br>30. Preparation of whey(lassi) from milk.(20hrs) | **Fermented beverages :**<br>• Study of Fermented Vinegars.(10 hrs)<br>• Principle of Vinegar Production.<br>• Principle and methods used in preparation of fermented beverages.<br>• Ingredients used in production of fermented beverages.<br>• Fermentation.<br>• Storage.(20 Hrs) |
| Professional Skill 100Hrs;<br><br>Professional Knowledge 24 Hrs | Prepare and pack fermented beverages such as whiskey, beer, wine, rum and brandy by using appropriate machines/tools such as, Fermenter, seed germinator, autoclave, bottle washer, required fermentation agents, liquid/bottle filling machine, Chemical solutions and corking machine with safety | 31. Selection of ingredients for the production of whiskey, beer, wine, rum, brandy.(20hrs)<br>32. Demonstrations of beer, whiskey, wine, rum and brandy.(20hrs)<br>33. Quality testing in alcholoic beverages. (20hrs)<br>34. Packaging of the alcoholic beverages.(16 hrs)<br>35. Industrial visit of food beverages industry. (24 Hrs.) | **Alcoholic Beverages :**<br>• Commercial process details of manufacturing alcoholic beverages like whiskey, beer, wine, rum, brandy.<br>• Role of ingredients used in production of various alcoholic beverages.<br>• Nutritional and energy values of these products. (24 Hrs.) |

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| | precautions, determine the alcohol content, acidity, TSS content , pH value and Sensory evaluation. (Mapped NOS:FIC/N2002) | | |
| Professional Skill 40Hrs;<br><br>Professional Knowledge 12Hrs | Explain food safety standards and beverage industry waste utilization (Mapped NOS:FIC/N9001) | 36. Application of HACCP and GMP in Food beverages industry. (20 Hrs)<br>37. Utilization of Food beverages industry wastes. (20 hrs) | **Food safety and regulations**<br>• **FSSAI:** FDA, Codex Alimentarius, PFA, FPO, BIS, ISO-22000, Agmark, Overview of Food Safety and Standards Act, 2006, HACCP, Food Safety Management System, International Food Standard (SPS,TBT, Drug, Residues Chemicals, GMO) GMP (Good Manufacturing Practices<br>• Importance of personal Hygiene, Cleaning & Sanitary standards of Food beverages industry. (12 hrs) |
| **Industrial Training in Alcoholic or carbonated beverage industry** | | | |

| SYLLABUS FOR CORE SKILLS |
| --- |
| 1. Employability Skills (Common for all CTS trades) (120 Hrs) |

Learning outcomes, assessment criteria, syllabus and Tool List of Core Skills subjects which is common for a group of trades, provided separately in www.bharatskills.gov.in / dgt.gov.in

## ANNEXURE-I

| LIST OF TOOLS & EQUIPMENT | | | |
|---|---|---|---|
| **FOOD BEVERAGE (For a batch of 24 Candidates)** | | | |
| **S No.** | **Name of the Tools and Equipment** | **Specification** | **Quantity** |
| **A. EQUIPMENT, MACHINE & TOOLS** | | | |
| 1. | Oven | Upto 5 KW | 1 no. |
| 2. | Platform scale balance | 100 Kg Capacity | 1 no. |
| 3. | Soda making machines | | 1 no. |
| 4. | Vinegar generator | Chamber made of SS, with sparger and baffles | 1 no. |
| 5. | Fermenter | Bioreactor, SS, with sparger and baffles | 1 no. |
| 6. | Slicing machine | | 1 no. |
| 7. | Automatic pouch machine / filler sealer machine | | 1 no. |
| 8. | Pulping Machine/Pulper for fruits and | | 1 no. |
| 9. | Steam jacket kettle 50 litre double jacketed with indenting lever, steam inlet and outlet with steel trolley and accessories to be fitted with boiler. | | 1 no. |
| 10. | Fruit mill | | 1 no. |
| 11. | Juice Extractor | | 1 no. |
| 12. | Corking machines | | 1 no. |
| 13. | Can seamer, can Reformer, Can Flanger | | 1 no. Each |
| 14. | Exhaust box | | 1 no. |
| 15. | Auto clave | | 1 no. |
| 16. | Cup sealer | | 1 no. |
| 17. | Digital weighing balance | 100 Kg, 2 Kg | 02 nos. |
| 18. | Mini water treatment plant | | 1 no. |
| 19. | Hot plate | Electrical 2 KW | 1 no. |
| 20. | Refrigerator | 220 litre | 1 no. |
| 21. | Tanks SS | 50 liters capacity, cylindrical with cap | 1 no. |

| | | | |
|---|---|---|---|
| 22. | Syrup tanks | 50, 100 lit capacity SS | 1 no. each |
| 23. | Pressure Cooker | 5 Kg and 10 Kg SS | 1 no. each |
| 24. | Liquid filling machine | For filling liquid in bottles, 200 ml, 500 ml, 1000 ml. Manual | 1 no. each |
| 25. | SS filter | Sieve type cloth filter, hydraulic, | 1 no. |
| 26. | Improved stoves | Made of MS with proper safety Measures, Valves etc | 2 nos. |
| 27. | Homogenizer | | 1 no. |
| 28. | Juicer mixer grinder | | 2 nos. |
| 29. | Baby Boiler/Diesel fuel/capacity of boiler as per capacity of steam jacket kettle. | | 1 no. |
| 30. | Carbonation machines | | 1 no. |
| 31. | Distillation Assembly | | 1 no. |
| 32. | Soft drink making machines | | 1 no. |
| **B. CONSUMABLES TOOLS & ITEMS** | | | |
| 33. | Steel scale | 12 " standard steel | 2 nos. |
| 34. | Steel tape | Scales 1 meter, and of 50 ft | 2 nos. |
| 35. | Cutting equipments | Different knives, Cutters for fruits /Vegetables | As required |
| 36. | Bottle opener | Heavy duty, Stainless Steel | 4 nos. |
| 37. | Burette | 50 ml digital Automatic/ ordinary glass | 2 nos. |
| 38. | Pipette | 5-50 ml capacities, glass | 2 nos. |
| 39. | Stainless steel / Aluminium pots | Different Capacities | As required |
| 40. | Wooden spoons | Different sizes | As required |
| **C: FURNITURE** | | | |
| **Class Room** | | | |
| 41. | Instructor Chair & Table | | 01 No |
| 42. | Dual Desk | | 12 No. |
| **Workshop / Lab** | | | |
| 43. | Suitable Work tables | | 04 No. |
| 44. | Stools | | 24 No. |
| 45. | Discussion Table | | 01 No. |
| 46. | Tool Cabinet | | 01 No. |

| | | | |
|---|---|---|---|
| 47. | Trainees Locker with space for 24 | | 01 No. |
| 48. | First Aid Box | | 01 No. |
| 49. | Book Shelf (glass panel) | | 01 No. |
| 50. | Fire Extinguisher | Arrange all proper NOCs and equipment from Municipal/Competent authorities. | |
| 51. | Computer with Printer | Latest | 01 No. |

***Note: -***

1. *All the tools and equipment are to be procured as per BIS specification.*
2. *Internet facility is desired to be provided in the class room.*
3. Raw material, Testing Chemicals and consumables are not included in the list.

## ABBREVIATIONS

| | |
|---|---|
| CTS | Craftsmen Training Scheme |
| ATS | Apprenticeship Training Scheme |
| CITS | Craft Instructor Training Scheme |
| DGT | Directorate General of Training |
| MSDE | Ministry of Skill Development and Entrepreneurship |
| NTC | National Trade Certificate |
| NAC | National Apprenticeship Certificate |
| NCIC | National Craft Instructor Certificate |
| LD | Locomotor Disability |
| CP | Cerebral Palsy |
| MD | Multiple Disabilities |
| LV | Low Vision |
| HH | Hard of Hearing |
| ID | Intellectual Disabilities |
| LC | Leprosy Cured |
| SLD | Specific Learning Disabilities |
| DW | Dwarfism |
| MI | Mental Illness |
| AA | Acid Attack |
| PwD | Person with disabilities |


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