



COMPETENCY-BASED CURRICULUM

FOR THE TRADE OF

FOOD BEVERAGE

UNDER

CRAFTSMEN TRAINING SCHEME (CTS)

IN SEMESTER PATTERN

Government of India
Ministry of Skill Development and Entrepreneurship
Directorate General of Training

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1. INTRODUCTION

India is one of the youngest nations in the world. Our youth are our strength. However, a challenge facing the country is that of skilling our youth as per the demands of the industry. Recognizing the need for quickly coordinating the skill development and entrepreneurship efforts of all concerned stakeholders, the Government of India created the Ministry of Skill Development and Entrepreneurship on 9th November, 2014. To create further convergence between the Vocational Training System through Industrial Training Institutes (ITIs) and the new skill initiatives of the Government, the Training and Apprenticeship Training divisions from the Directorate General of Employment and Training (DGET) under the Ministry of Labour and Employment stand transferred to the Ministry of Skill Development and Entrepreneurship (MSDE) with effect from 16th April, 2015. This move brings over 11000 ITIs and scores of other institutions, and the Apprenticeship and Training divisions, under the Ministry.

The Ministry of Skill Development and Entrepreneurship is an apex organization for the development and coordination of the vocational training including Women's Vocational Training in our country. The Ministry conducts the vocational training programmes through the Craftsmen Training Scheme (CTS), Apprenticeship Training Scheme (ATS), Modular Employable Scheme (MES) under the Skill Development Initiative (SDI) Scheme, and Craftsmen Instructor Training Scheme (CITS) to cater the needs of different segments of the Labour market. The National Council for Vocational Training (NCVT) acts as a central agency to advise Government of India in framing the training policy and coordinating vocational training throughout India. The day-to-day administration of the ITIs rests with the State Governments/ Union Territories.

- Training courses under the CTS is being offered through a network of more than 11000 Government and Private Industrial Training Institutes (ITIs) located all over the country with a total seating capacity of more than 16 Lakhs with an objective to provide skilled workforce to the industry in 126 trades. Skill development courses exclusively for women are also being offered under CTS and other schemes through Government and Private ITIs and Regional Vocational Training Institutes (RVTIs) for Women.
- The Apprentices Act, 1961 was enacted with the objective of regulating the program of apprenticeship training in the industry by utilizing the facilities available within for imparting on-the-job training. The Act makes it obligatory for employers in specified industries to engage apprentices in designated trades to impart on the job training for school leavers, and ITI passed outs to develop skilled manpower for the industry.
- The Ministry is implementing the Employable Scheme (MES) under the Skill Development Initiative Scheme to provide vocational training to people to develop skilled manpower for the industry through a network of Vocational Training Providers (VTPs) located across the country.

Central Staff Training and Research Institute (CSTARI), Kolkata is the nodal institute for the development/revision of curricula under all vocational training schemes of the

Ministry. National Instructional Media Institute (NIMI), Chennai is to make available instructional material in various trades for the use of trainees and trainers to ensure overall improvement in the standard of institutional training under the CTS and ATS schemes. The institute is actively involved in the development, production and dissemination of instructional media Packages (IMPs) comprising of books on Trade Theory, Trade Practical, Test/Assignment, and Instructor's Guide.

The National Skills Qualification Framework (NSQF), published in the Gazette of India on 27th December, 2013, is a national framework that aims to integrate general and vocational streams of education and training. The main goal of the NSQF is to focus on competency-based qualifications, which in turn facilitate and enhance transparency, both within and between general and vocational streams. The National Skill Development Agency (NSDA) under the Ministry is responsible for anchoring and implementation of the Framework, by bringing together the key stakeholders through the National Skill Qualifications Committee (NSQC).

The competency-based framework organizes qualifications into ten levels, with the entry level being 1, and the highest level being 10. Each level of the NSQF is described by a statement of learning outcomes in five domains, known as level descriptors. These five domains are (1) Process, (2) Professional knowledge, (3) Professional skill, (4) core skill, and (5) Responsibility. The paradigm shift from learning focused on inputs to an outcome/competency-based education would help in the Recognition of Prior Learning (RPL), and simultaneously enable the alignment of the Indian qualifications with international ones. Government funding is expected to be on a preferential basis for NSQF compliant courses. The NSQF notification provides a Qualification Register, which is the official national database of all qualifications aligned to NSQF levels. Through this Register, learners can expect access to all NSQF compliant qualifications.

The Ministry has set up Mentor Councils to focus on courses under NCVT in various sectors with representation from thought leaders among different stakeholders viz., industries, innovative entrepreneurs who have proved to be game-changers, academic/professional institutions, and champion ITIs for each of the sectors. The Mentor Council for each sector reviews curriculum, admission criteria, course duration, and requirement of trainers and assessment/evaluation systems for the sector on a continuous basis and make recommendations regarding the same. Sector-wise Core Groups are formed to plan and prepare the documentation for the competency-based curricula for the courses under each sector.

2. GENERAL INFORMATION

1	Qualification	Food Beverage
2	N.C.O./NOS Code No.	7415.90
3	NSQF Level	Level 4
4	Duration of the course/qualification	One year (Two semesters)
5	Entry Qualification	Passed 10th Class with Science and Mathematics
6	Trainees per unit	20

Note:

- i) Out of the two Instructors required for a unit of 2(1+1), one must have Degree/Diploma, and other must have NTC/NAC qualifications, in the relevant field.

Distribution of notional training hours of the training per week:

Total hours /week	Trade practical	Trade theory	Employability skills	Extra-curricular activity
40 Hours	30 Hours	6 Hours	2 Hours	2 Hours

3. COURSE STRUCTURE

Name of the Qualification: Food Beverage

Total duration of the course: 12 Months

Training duration details:

Course Elements	Hourly Distribution
Professional Skills	1320 hrs
Professional Knowledge	264 hrs
Employability Skills	88 hrs
Extra Curricular Activities	88 hrs
In-plant Training/Project Work	160 hrs
Admission & Examination	160 hrs
Total	2080 hrs

4. JOB ROLES

4.1 Brief description

This course is meant for the candidates who aspire to become:

- Quality Analyst in Food Beverage industry.
- Supervisor in Beverages Industry.
- Packaging Supervisor in Beverage industry.
- Skilled Worker in Food MNC.
- Entrepreneur in Beverage industry.

4.2 NOS & QP/NCO Mapping:

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5. NSQF LEVEL COMPLIANCE

The Broad Learning outcomes of Food beverage trade under CTS matches with the Level descriptor at Level 4.

The NSQF level-4 descriptor is given below:

LEVEL	Process required	Professional knowledge	Professional skill	Core skill	Responsibility
Level 4	work in familiar, predictable, routine, situation of clear choice	factual knowledge of field of knowledge or study	recall and demonstrate practical skill, routine and repetitive in narrow range of application, using appropriate rule and tool, using quality concepts	language to communicate written or oral, with required clarity, skill to basic Arithmetic and algebraic principles, basic understanding of social political and natural environment	Responsibility for own work and learning.

6. GENERAL TRAINING PLAN, EXAMINATION & PASS REGULATION

General Training Plan

The knowledge and skill components as stated in the section for 'learning outcomes' are to be imparted in accordance with the instructions in respect of the content and time structure.

Assessment

The assessment for the semester-based qualification is carried out by conducting formative assessments, and end-of-semester examinations, as per the guidelines given in the Curriculum. The internal assessments for theory subjects and practical are conducted for evaluating the knowledge and skill acquired by trainees and the behavioural transformation of the trainees as per the learning outcomes. Theory examinations are conducted in Trade Theory, Workshop Calculation & Science, Engineering Drawing and Employability Skills. Trade practical examinations are conducted by the respective State Governments. The details of the examination and assessment standard are in a latter section. NCVT prepares the question papers for the Trade practical. Candidates are to demonstrate that they can:

1. Read& interpret technical parameters/documentation, plan and organize work processes, and identify necessary materials and tools,
2. Perform a task/job with due consideration to safety rules, accident prevention regulations and environmental protection stipulations,
3. Apply Professional Knowledge, Core Skills, and Employability Skills while performing the task/job.
4. Check the task/job as per the drawing for proper functioning, and identify and rectify errors in the job, if any.
5. Document the technical parameters related to the task/job.

Pass regulation

For the purposes of determining the overall result, weightage of 25 percent is applied to each semester examination. The minimum pass percent for Practical is 60% & minimum pass percent for Theory subject is 40%.

7. LEARNING OUTCOMES

The following are minimum broad learning outcomes after completion of the Food beverage course of [Duration of course]-1 year duration:

A. GENERIC OUTCOMES

1. Recognize & comply safe working practices, environment regulation and housekeeping.
2. Work in a team, understand and practice soft skills, technical English to communicate with required clarity.
3. Understand and explain the concept in quality tools and labour welfare legislation and apply such in day to day work to improve productivity & quality.
4. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.
5. Explain entrepreneurship and manage/organize related task in day to day work for personal & societal growth.
6. Understand and apply basic computer working, basic operating system and uses internet services to get accustomed & take benefit of IT developments in the industry.

B. SPECIFIC OUTCOMES

SEMESTER – I

- 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 package fruit beverages such as Squashes, RTS, Nectar, Cordial, Crush, and (malt, badam, pista, herbal, rose) Syrup by using appropriate machines such as pulper/juice extractor, autoclave, bottle washer, liquid/bottle filling machine and corking machine with safety precautions, determine the acidity and TSS content.
- Prepare and pack soda water by using appropriate machines such as soda making machines, autoclave, bottle washer, liquid/bottle filling machine and corking machine with safety precautions and explain quality standards for soda water.
- Prepare mineral water by using appropriate machines such as mini water plant and explain quality standards (BIS) of water and water treatment process.
- 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.

- Explain various types of packaging material used in food beverages products and storage.

SEMESTER – II

- Prepare and pack fruit 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.
- Prepare and pack fermented beverages such as vinegar, fermented juices and lassi by using appropriate machines/tools such as, Fermentor, 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.
- Prepare and pack fermented beverages such as whiskey, beer, wine, rum and brandy by using appropriate machines/tools such as, Fermentor, 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.
- Explain food safety standards and beverage industry waste utilization.

8. ASSESSABLE OUTCOMES WITH ASSESSMENT CRITERIA

Note:

1. The training shall be conducted as per the syllabus.
2. The trainee shall demonstrate the competencies that are defined below in the assessable outcomes highlighted below.
3. The trainee shall be assessed for his/her achievement levels in all the assessable outcomes on the basis of the formative assessment, Theory & Practical examinations, observation, and viva-voce.
4. The trainee shall be assessed for his/her achievement levels in all the assessable outcomes of the Employability Skills on the basis of Theory Examinations, and for his/her ability to apply the concepts in Practical.
5. The assessable outcomes and assessment criteria will serve as a set of guidelines for Trainers, Paper setters, Moderators, and Assessors.

Assessable outcomes along with assessment criteria to be achieved after each semester and completion of qualification:

Generic assessable outcomes:

ASSESSABLE OUTCOMES	ASSESSMENT CRITERIA
1. Recognize & comply safe working practices, environment regulation and housekeeping.	1.1 Follow and maintain procedures to achieve a safe working environment in line with occupational health and safety regulations and requirements and according to site policy.
	1.2 Recognize and report all unsafe situations according to site policy.
	1.3 Identify and take necessary precautions on fire and safety hazards and report according to site policy and procedures.
	1.4 Identify, handle and store / dispose off dangerous goods and substances according to site policy and procedures following safety regulations and requirements.
	1.5 Identify and observe site policies and procedures in regard to illness or accident.
	1.6 Identify safety alarms accurately.
	1.7 Report supervisor/ Competent of authority in the event of accident or sickness of any staff and record accident details correctly according to site accident/injury procedures.
	1.8 Identify and observe site evacuation procedures according to site policy.
	1.9 Identify Personal Productive Equipment (PPE) and use

	<p>the same as per related working environment.</p> <p>1.10 Identify basic first aid and use them under different circumstances.</p> <p>1.11 Identify different fire extinguisher and use the same as per requirement.</p> <p>1.12 Identify environmental pollution & contribute to the avoidance of instances of environmental pollution.</p> <p>1.13 Deploy environmental protection legislation & regulations</p> <p>1.14 Take opportunities to use energy and materials in an environmentally friendly manner</p> <p>1.15 Avoid waste and dispose waste as per procedure</p> <p>1.16 Recognize different components of 5S and apply the same in the working environment.</p>
2. Work in a team, understand and practice soft skills, technical English to communicate with required clarity.	<p>2.1 Obtain sources of information and recognize information.</p> <p>2.2 Use and draw up technical drawings and documents.</p> <p>2.3 Use documents and technical regulations and occupationally related provisions.</p> <p>2.4 Conduct appropriate and target oriented discussions with higher authority and within the team.</p> <p>2.5 Present facts and circumstances, possible solutions & use English special terminology.</p> <p>2.6 Resolve disputes within the team</p> <p>2.7 Conduct written communication.</p>
3. Understand and explain the concept in productivity, quality tools, and labour welfare legislation and apply such in day to day work to improve productivity & quality.	<p>3.1 Semester examination to test the concept in productivity, quality tools and labour welfare legislation.</p> <p>3.2 Their applications will also be assessed during execution of assessable outcome.</p>
4. Explain energy conservation, global warming and pollution and contribute in day to day work by optimally using available resources.	<p>4.1 Semester examination to test knowledge on energy conservation, global warming and pollution.</p> <p>4.2 Their applications will also be assessed during execution of assessable outcome.</p>
5. Explain entrepreneurship and manage/organize related	<p>5.1 Semester examination to test knowledge on entrepreneurship.</p> <p>5.2 It's applications will also be assessed during execution</p>

task in day to day work for personal & societal growth.	of assessable outcome.
6. Understand and apply basic computer working, basic operating system, simulate part programme using simulation software and uses internet services to get accustomed & take benefit of IT developments in the industry.	6.1 Semester examination to test knowledge on basic computer working, basic operating system and uses internet services. 6.2 Their applications will also be assessed during execution of assessable outcome.

B. SPECIFIC OUTCOMES

Semester-I

ASSESSABLE OUTCOME	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.	<ul style="list-style-type: none"> • 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

<p>2. Prepare mineral water by using appropriate machines such as mini water plant and explain quality standards (BIS) of water and water treatment process.</p>	<ul style="list-style-type: none"> • Maintain perfect hygiene standard • Describe standard of water and types of water hardness. • Describe temporary water treatment process. • Explain types of water treatment like R.O., U.V. treatment. • Explain production of mineral water. • Production of mineral water. • Maintain safety
<p>3. 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.</p>	<ul style="list-style-type: none"> • 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
<p>4. Explain various types of packaging material used in packaging of food beverages products and storage.</p>	<ul style="list-style-type: none"> • 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.

Semester-II

ASSESSABLE OUTCOME	ASSESSMENT CRITERIA
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.	<ul style="list-style-type: none">● 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 and 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, Fermentor, 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.

- 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 and Sensory evaluation
- Fill beverage into sterilized bottles
- cork and crown the bottles
- Label the bottle
- Maintain safety

<p>7. Prepare and pack fermented beverages such as whiskey, beer, wine, rum and brandy by using appropriate machines/tools such as, Fermentor, 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.</p>	<ul style="list-style-type: none"> ● 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
<p>8. Explain food safety standards and beverage industry waste utilization</p>	<ul style="list-style-type: none"> ● 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

9. SYLLABUS CONTENT WITH TIME STRUCTURE

SYLLABUS FOR THE TRADE OF Food Beverage

9.1 Syllabus Content for Professional Skill & Knowledge

First Semester

Duration: Six Months

Detailed Syllabus

FOOD BEVERAGES		
SYLLABUS: FIRST SEMESTER		
Weeks	Practical	Theory
1-3	<ul style="list-style-type: none"> Study of the different food beverages available in the Market. 	<p>Introduction to different food beverage</p> <ul style="list-style-type: none"> Types of beverages. Need of particular beverage. Classification of food beverages. Raw materials used for beverages. PFA-standards for food beverages. Food additives used in different beverages. Quality of water for beverages.
4-6	<ul style="list-style-type: none"> Operate all equipment safely. Identify and removal of faults in machines. 	<p>Primary processing machinery:</p> <ul style="list-style-type: none"> 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
7-8	<ul style="list-style-type: none"> Extraction of juice from different fruits. Preservation of fruits juices with addition of preservative. 	<p>Juice Extractions :</p> <ul style="list-style-type: none"> Principle and methods for fruits juice manufacture, machinery used in different fruits juice extraction Preparation process flow charts of juice extraction from various fruits. <p>Preservative :</p> <ul style="list-style-type: none"> Definition of Preservatives. Types of preservatives commonly used

		<p>in food industry. Limits of usage of preservatives</p>
9-12	<ul style="list-style-type: none"> • Material calculation of Fruit Beverages as per FPO Specification. • Preparation of common fruit beverages available in the region such as squashes, crushes, cordial, syrups, nectars, R.T.S. beverages. • Determination of Acids in fruits beverages. • Determination of TSS with Hand refractometer in fruit Beverage. 	<p>Non Alcoholic Beverages (TEA COFFEE) :</p> <ul style="list-style-type: none"> • Type of non alcoholic beverage. • Preparation process and latest development. • Machinery and equipment for non alcoholic beverages. • Process variable and their control. • Nutritional and energy values <p>Fruit Beverages</p> <ul style="list-style-type: none"> • Introduction to different fruits juices. • Raw materials used in fruit beverages, and their properties. • Machinery involved in different fruits juice extraction. • Principle and preparation methods of Ready-To-Serve (RTS), Squash, fruit juice, nectar, concentrate, syrup, cordial, • Process of manufacture • Quality control in beverage industry. FPO standards for fruit beverages.
13-14	<ul style="list-style-type: none"> • Preparation of various flavoured milk beverages. • Packaging, labelling and storage of flavoured milk. • Quality of Flavoured milk. 	<p>Flavoured milk Beverages :</p> <ul style="list-style-type: none"> • Raw materials used in flavoured milk beverages, and their properties. • Nutritional and energy values. • Process of manufacture Quality control
15-16	<ul style="list-style-type: none"> • General purification techniques. • Production of mineral water from mini water treatment plant. • Quality of packaged water 	<p>Package drinking water :</p> <ul style="list-style-type: none"> • Principle and method for production of mineral water. • Quality standard (BIS) of water. Different types of water.
17-18	<ul style="list-style-type: none"> • Production of soda water. • Packaging, labelling and storage of soda water 	<p>Soda water :</p> <ul style="list-style-type: none"> • Principle and Method of soda water production. • Raw material used in soda water, and their properties.

		<ul style="list-style-type: none"> • Quality standards for soda water.
19-20	<ul style="list-style-type: none"> • Preparation of malt syrup, badam, pista, herbal, concentrates, rose syrup 	Miscellaneous Beverage : <ul style="list-style-type: none"> • Beverage from other materials, grains malt, vegetable (tomato), herbs & medicinal plants
21-22	<ul style="list-style-type: none"> • Practical demonstration of bottle filling machine. 	<ul style="list-style-type: none"> • 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.
23-25	Industrial Training in Food Beverage industry	
26	Revision/Examination	

Second Semester

Duration: Six Months

Detailed Syllabus:

FOOD BEVERAGES		
SYLLABUS: SECOND SEMESTER		
Weeks	Theory	Practical
1-2	Food beverage <ul style="list-style-type: none">• Importance of food beverages for entrepreneurship.• Scope of food beverages.• Beverages and its importance in modern life.• Industrial growth and development.	<ul style="list-style-type: none">• Study of the different carbonated and non carbonated, alcoholic and non alcoholic, fermented and unfermented beverages available in the market
3-7	Synthetic soft drinks : <ul style="list-style-type: none">• Study the role of ingredients used in production of soft drink.• Process of manufacture of soft drinks.• Quality of water for soft drinks.• Study the detail of various water treatment processes.• Food additives used in soft drinks.• Quality control in a soft drink manufacturing industry.	<ul style="list-style-type: none">• Selection of ingredients for soft drink production• Preparation of different soft drinks.• Packaging of the soft drinks (PET Bottling, canning)• Quality testing in soft drinks.
8-12	Fermented beverages : <ul style="list-style-type: none">• Study of Fermented vinegars.• Principle of Vinegar Production,• Principle and methods used in preparation of fermented beverages.• Ingredients used in productions of fermented beverages.• Fermentation• Storage	<ul style="list-style-type: none">• Preparation of malt extract• Preparation of cider, vinegar, banana, pineapple beverages.• Quality testing in fermented beverages.• Packaging of the fermented beverages.• Fermentation of Fruits juices.• Preparation of whey (lassi) from milk.

13-18	Alcoholic Beverages : <ul style="list-style-type: none"> • Commercial process details of manufacturing alcoholic beverages like whiskey, beer, wine, rum, brandy. • Role of ingredients used in production of various alcoholic beverages. • Nutritional and energy values of these products. 	<ul style="list-style-type: none"> • Selection of ingredients for the production of whiskey, beer, wine, rum, brandy. • Demonstrations of beer, whiskey, wine, rum and brandy. • Quality testing in alcoholic beverages. • Packaging of the alcoholic beverages. • Industrial visit of alcoholic beverages industry.
19-22	Food safety and regulations <ul style="list-style-type: none"> • 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).Importance of personal Hygiene, Cleaning & Sanitary standards of Food beverages industry. 	<ul style="list-style-type: none"> • Application of HACCP and GMP in Food beverages industry. • Utilization of Food beverages industry wastes.
23-25	Industrial Training in Alcoholic or carbonated beverage industry	
26	Revision/Examination	

9.2 SYLLABUS CONTENT OF EMPLOYABILITY SKILLS

General Information

Name of the subject	: EMPLOYABILITY SKILLS
Applicability	: CTS- Mandatory for all trades ATS- Mandatory for fresher only
Hours of Instruction	110 Hrs.
Examination	: The examination shall be held at the end of semesters.
Instructor Qualification	<ul style="list-style-type: none"> • MBA or BBA with two years' experience or Graduate in Sociology/ Social Welfare/ Economics with Two years' experience or Graduate/ Diploma with Two years' experience and trained in Employability Skills from ITIs and • Must have studied English/ Communication Skills and Basic Computer at 12th / Diploma level and above or • Existing Social Studies Instructors duly trained in Employability Skills from DGET institutes
Instructor	<ul style="list-style-type: none"> • One full-time instructor is required for 1000 seats and above • For seats less than 1000, the instructor may be out sourced/ hired on contract basis.

Semester-wise Distribution of Topics (Employability Skill)

Course Duration	Topics		Examination
	Semester 1	Semester 2	
01 Year (Two semesters)	1. English Literacy 2. I.T. Literacy 3. Communication Skills	1. Entrepreneurship Skills 2. Productivity 3. Occupational Safety , Health, and Environment Education 4. Labour Welfare 5. Legislation 6. Quality Tools	Final examination at the end of second semester

Syllabus Content for Employability Skills

Semester 1

Learning Objectives (1st semester)

1. Read, write and communicate in English language for day to day work.
2. Communicate in written and oral and with required clarity ensuring that the information communicated is clear, concise and accurate.
3. Understand and apply basic computer working, basic operating system and uses internet services to get accustomed & take benefit of IT developments in the industry.

Detailed Syllabus

1. English Literacy	
Hours of Instruction: 20 Hrs.	Marks Allotted: 09
Pronunciation	Accentuation (mode of pronunciation) on simple words, Diction (use of word and speech)
Functional Grammar	Transformation of sentences, Voice change, Change of tense, Spellings.
Reading	Reading and understanding simple sentences about self, work and environment
Writing	Construction of simple sentences Writing simple English
Speaking / Spoken English	Speaking with preparation on self, on family, on friends/ classmates, on know, picture reading gain confidence through role-playing and discussions on current happening job description, asking about someone's job habitual actions. Cardinal (fundamental) numbers ordinal numbers. Taking messages, passing messages on and filling in message forms Greeting and introductions office hospitality, Resumes or curriculum vita essential parts, letters of application reference to previous communication.
2. I.T. Literacy	
Hours of Instruction: 20 Hrs.	Marks Allotted: 09
Basics of Computer	Introduction, Computer and its applications, Hardware and peripherals, Switching on-Starting and shutting down of computer.
Computer Operating System	Basics of Operating System, WINDOWS, The user interface of Windows OS, Create, Copy, Move and delete Files and Folders, Use of External memory like pen drive, CD, DVD etc, Use of Common applications.
Word processing	Basic operating of Word Processing, Creating, opening and closing Documents, use of shortcuts, Creating and Editing of Text, Formatting the Text, Insertion & creation of Tables. Printing

and Worksheet	document. Basics of Excel worksheet, understanding basic commands, creating simple worksheets, understanding sample worksheets, use of simple formulas and functions, Printing of simple excel sheets
Computer Networking and INTERNET	Basic of computer Networks (using real life examples), Definitions of Local Area Network (LAN), Wide Area Network (WAN), Internet, Concept of Internet (Network of Networks), Meaning of World Wide Web (WWW), Web Browser, Web Site, Web page and Search Engines. Accessing the Internet using Web Browser, Downloading and Printing Web Pages, Opening an email account and use of email. Social media sites and its implication. Information Security and antivirus tools, Do's and Don'ts in Information Security, Awareness of IT – ACT, types of cyber crimes.

3. Communication Skills

Hour of Instruction: 15 Hrs.Marks Allotted: 07

Topic	Contents
Introduction to Communication Skills	Communication and its importance
	Principles of Effective communication
	Types of communication – verbal, nonverbal, written, email, talking on phone.
	Nonverbal communication –characteristics, components-Para-language
	Body – language
	Barriers to communication and dealing with barriers.
	Handling nervousness/ discomfort.
Listening Skills	Listening-hearing and listening, effective listening, barriers to effective listening guidelines for effective listening.
	Triple- A Listening – Attitude, Attention & Adjustment.
	Active Listening Skills.
	Characteristics Essential to Achieving Success
	The Power of Positive Attitude

Motivational Training	Self-awareness
	Importance of Commitment
	Ethics and Values
	Ways to Motivate Oneself
	Personal Goal setting and Employability Planning.
Facing Interviews	Manners, Etiquettes, Dress code for an interview
	Do's & Don'ts for an interview
Behavioral Skills	Problem Solving
	Confidence Building
	Attitude

Semester 2

Learning Objectives (2nd Semester)

1. Knowledge of business activities, ability to interact with consumers for development of businesses.
2. Understand and apply productivity, its benefits and factors affecting the productivity.
3. Follow and maintain procedures to achieve a safe working environment in line with occupational health, safety, environment regulations and Labour welfare legislation and requirements.
4. Understand and apply quality concepts as per ISO and BIS system and its importance.
5. Recognize different components of 5S and apply the same in the working environment.

Detailed Syllabus

4. Entrepreneurship skill	
Hour of Instruction: 15 Hrs.Marks Allotted: 06	
Topic	Content
Business & Consumer:	Types of business in different trades and the importance of skill, Understanding the consumer, market through consumer behavior, market survey, Methods of Marketing, publicity and advertisement

Self Employment:	Need and scope for self-employment, Qualities of a good Entrepreneur (values attitude, motive, etc.), SWOT and Risk Analysis
Govt Institutions :	Role of various Schemes and Institutes for self-employment i.e. DIC, SIDBI, MSME, NSIC, Financial institutions and banks
Initiation Formalities :	Project Formation, Feasibility, Legal formalities i.e., Shop Act, Estimation & Costing, Investment Procedure - Loan Procurement - Agencies - banking Process

5. Productivity
Hour of Instruction: 10 Hrs.Marks Allotted: 05

Productivity	Definition, Necessity, Meaning of GDP.
Benefits	Personal / Workman – Incentive, Production linked Bonus, Improvement in living standard. Industry Nation.
Affecting Factors	Skills, Working Aids, Automation, Environment, Motivation How improves or slows down.
Comparison with developed countries	Comparative productivity in developed countries (viz. Germany, Japan and Australia) in selected industries e.g. Manufacturing, Steel, Mining, Construction etc. Living standards of those countries, wages.
Personal Finance Management	Banking processes, Handling ATM, KYC registration, safe cash handling, Personal risk and Insurance.

6. Occupational Safety, Health & Environment
Hour of Instruction: 15 Hrs.Marks Allotted: 06

Safety & Health :	Introduction to Occupational Safety and Health and its importance at workplace
Occupational Hazards :	Occupational health, Occupational hygiene, Occupational Diseases/ Disorders & its prevention
Accident & safety :	Accident prevention techniques- control of accidents and

	safety measures
First Aid :	Care of injured & Sick at the workplaces, First-aid & Transportation of sick person
Basic Provisions :	Idea of basic provisions of safety, health, welfare under legislation of India
7.Labour Welfare Legislation Hour of Instruction: 05 Hrs.Marks Allotted: 03	
Labour Welfare Legislation	Benefits guaranteed under various acts- Factories Act, Apprenticeship Act, Employees State Insurance Act (ESI), Payment Wages Act, Employees Provident Fund Act, The Workmen"s Compensation Act
8.Quality Tools Hour of Instruction: 10 Hrs.Marks Allotted: 05	
Quality Consciousness :	Meaning of quality, Quality Characteristic
Quality Circles :	Definition, Advantage of small group activity, objectives of Quality Circle, Roles and Functions of Quality Circles in organisation, Operation of Quality Circle, Approaches to Starting Quality Circles, Steps for Continuation Quality Circles
Quality Management System:	Idea of ISO 9000 and BIS systems and its importance in maintaining qualities.
House Keeping :	Purpose of Housekeeping, Practice of good Housekeeping.5S Principles of Housekeeping: SEIRI – Segregation, SEITON – Arrangement, SEISO – Cleaning, SEIKETSU – maintenance of Standards, SHITSUKE - Discipline

10. INFRASTRUCTURE

1. Instructors' Qualification	(i) National Trade Certificate in Food Beverage trade with three years experience in relevant industry. OR (ii) Diploma in Food Technology with two years experience in relevant industry. OR (iii) Degree in Food Technology with one years experience in relevant industry.
Desirable qualification	Preference will be given to Craft Instructor's Certificate (CIC)
3. Space Norms	Lab Space – 96 Sq. m Class Room Space -30 Sq. m
4. Power Norms	6 KW
5. Tools, Equipment & General Machinery	(As per Annexure II)

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Note:

- (i) Out of two Instructors required for the unit of 2(1+1), one must have Degree/Diploma and other must have NTC/NAC qualifications.

11. ASSESSMENT STANDARD

11.1.ASSESSMENT GUIDELINES:

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 shall be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scarp/wastage as per procedure, behavioral attitude, sensitive to environment and regularity in training. The sensitivity towards OSHE and self-learning attitude shall be considered while assessing competency.

Assessment shall be evidence based comprising the following:

- 1) Job carried out in labs/workshop
- 2) Record book/ daily diary
- 3) Answer sheet for assessment
- 4) Viva-voce
- 5) Progress Chart
- 6) Attendance and punctuality
- 7) Assignment
- 8) Project work

Evidence of internal assessment should be preserved for an appropriate period of time for audit and verification by examination body.

The following marking pattern to be adopted while assessing:

a) Weightage in the range of 60-75% to be allotted during assessment under following performance level:

For performance in this grade, the candidate with occasional guidance and showing due regard for safety procedures and practices, has produced work that demonstrates attainment of an acceptable standard of craftsmanship. In this work there is evidence of:

- Demonstration of good skill in the use of hand tools, machine tools, and workshop equipment
- Below 70% tolerance dimension achieved while undertaking different work with those demanded by the component/job.
- A fairly good level of neatness and consistency in the finish
- Occasional support in completing the project/job.

b) Weightage in the range of above 75%- 90% to be allotted during assessment under following performance level:

For this grade, the candidate, with little guidance and showing due regard for safety procedures and practices, has produced work that demonstrates attainment of a reasonable standard of craftsmanship. In this work there is evidence of:

- Good skill levels in the use of hand tools, machine tools, and workshop equipment

- 70-80% tolerance dimension achieved while undertaking different work with those demanded by the component/job.
- A good level of neatness and consistency in the finish
- Little support in completing the project/job

c) Weightage in the range of above 90% to be allotted during assessment under following performance level:

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. In this work there is evidence of:

- High skill levels in the use of hand tools, machine tools, and workshop equipment
- Above 80% tolerance dimension achieved while undertaking different work with those demanded by the component/job.
- A high level of neatness and consistency in the finish.
- Minimal or no support in completing the project.

11.2. INTERNAL ASSESSMENT (FORMATIVE ASSESSMENT)

Comp. No.	ASSESSABLE OUTCOME	INTERNAL ASSESSMENT Marks
GENERIC		
	Recognize & comply safe working practices, environment regulation and housekeeping.	
	Work in a team, understand and practice soft skills, technical English to communicate with required clarity.	
	Explain energy conservation, global warming, and pollution and contribute in the day to day work by optimally using available resources.	
	Explain personnel finance, entrepreneurship, and manage/organize related task in the day to day work for personal & societal growth.	
	Understand and apply basic computer working, basic operating system, simulate part program using simulation software and uses internet services to get accustomed & take benefit of IT developments in the industry.	
SPECIFIC		
	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 package fruit beverages such as Squashes, RTS, Nectar, Cordial, Crush, and (malt, badam, pista, herbal, rose) Syrup by using appropriate machines such as pulper/juice extractor, autoclave, bottle washer, liquid/bottle filling machine and corking machine with safety precautions, determine the acidity and TSS content.	
	Prepare and pack soda water by using appropriate machines such as soda making machines, autoclave, bottle washer, liquid/bottle filling machine and corking machine with safety precautions and explain quality standards for soda water.	
	Prepare mineral water by using appropriate machines such as mini water plant and explain quality standards (BIS) of water and water treatment process.	

	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.	
	Explain various types of packaging material used in food beverages products and storage.	
	Sub-Total of Internal assessment for Semester- I	20
	Prepare and pack fruit 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.	
	Prepare and pack fermented beverages such as vinegar, fermented juices and lassi by using appropriate machines/tools such as, Fermentor, 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.	
	Prepare and pack fermented beverages such as whiskey, beer, wine, rum and brandy by using appropriate machines/tools such as, Fermentor, 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.	
	Explain food safety standards and beverage industry waste utilization.	
	Sub-Total of Internal assessment for Semester- II	
	Total of Internal Assessment	40

Note: The generic outcome to be assessed along with the specific outcome.

11.3 FINAL ASSESSMENT- All India Trade TEST (SUMMATIVE ASSESSMENT)

- There will be a single objective type Examination paper for the subjects Trade Theory and Employability Skills.
- The two objective type Examination papers as mentioned above will be conducted by National Council for Vocational Training (NCVT), whereas examination for the subject Trade Practical will be conducted by the State Government. NCVT shall supply the Question Paper for the subject Trade Practical.

Marking Pattern		
Sl. No.	Subject for the trade test	Maximum marks for the each subject
a)	Practical	100
b)	Trade Theory	80
c)	Employability Skills	Objective type Written test of 80 marks (Trade Theory 30 marks & Employability Skills 50 marks)
d)	Internal assessment	20
TOTAL:		200

Annexure - I
TRADE: FOOD BEVERAGE

Equipment, Machine & Tools		
Sl. No.	Item/ Specification	Quantity proposed for a batch of 20
1	Oven : 5 KW,	1
2	Platform scale balance : 100 Kg Capacity,	1
3	Soda making machines	1
4	Seed germinator : Cabinet type, Different chambers, Temp and RH Controller	1
5	Vinegar generator : Chamber made of SS, with sparger and baffles	1
6	Fermenter : Bioreactor, SS, with sparger and baffles	1
7	Slicing machine	1
8	Automatic pouch machine / filler sealer machine	1
9	Pluping Machine/Pulper for fruits and	1
10	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
11	Fruit mill	1
12	Juice Extractor	1
13	Corking machines	1
14	Can seamer	1
15	Exhaust box	1
16	Auto clave	1
17	Cup sealer	1
18	Steel scale : 12 “ standard steel	2
19	Steel tape : Scales 1 meter, and of 50 ft	2
20	Digital weighing balance	03
21	Cutting equipments : Different knives, Cutters for fruits /Vegetables	As required
22	Mini water treatment plant	1
23	Hot plate : Electrical 2 KW	1
24	Refrigerator 220 litre	1
25	Tanks SS : 50 liters capacity, cylindrical with cap	1

26	Syrup tanks : 50, 100 lit capacity SS	01 each
27	Pressure Cooker : 5 Kg and 10 Kg SS	01 each
28	Liquid filling machine : For filling liquid in bottles, 200 ml, 500 ml, 1000 ml. Manual	01 each
29	SS filter : Sieve type cloth filter, hydraulic,	1
30	Sugar coating pan : SS, Revolving type with speed	1
31	Bottle opener : Heavy duty, Stainless Steel	4
32	Burette : 50 ml digital Automatic/ ordinary glass	2
33	Pipette : 5-50 ml capacities, glass	2
34	Improved stoves : Made of MS with proper safety Measures, Valves etc	2
35	Stainless steel / Aluminium pots : Different Capacities	As required
36	Wooden spoons : Different sizes	As required
37	Homogenizer	1
38	Juicer mixer grinder	02
39	Baby Boiler/Diesel fuel/capacity of boiler as per capacity of steam jacket kettle.	01
40	Carbonation machines	01
41	Distillation Assembly	01
42	Soft drink making machines	01

- Raw material, Testing Chemicals and consumables are not included in the list.

A)	Furniture		
	Class Room <ul style="list-style-type: none"> • Instructor Chair & Table • Dual Desk 	: :	01 No 10Nos.
	Workshop/Lab <ul style="list-style-type: none"> • Suitable Worktables • Stools • Discussion Table 	: : :	06Nos. 20Nos. 01No.
	Tool Cabinet	:	01No.
	TraineesLockerwithspacefor20	:	01No.
	First Aid Box	:	01No.
	Book Shelf(glass panel)	:	01No.
	Storage rack	:	01No.

ANNEXURE-II

GUIDELINES FOR INSTRUCTORS AND PAPER SETTERS

1. All questions of theory paper for the trade will be in objective type format.
2. Due care to be taken for proper & inclusive delivery among the batch. Some of the following method of delivery may be adopted:
 - a. Lecture
 - b. Lesson
 - c. Demonstration
 - d. Practice
 - e. Group discussion
 - f. Discussion with peer group
 - g. Project work
 - h. Industrial visit
3. Maximum utilization of latest form of training viz., audio visual aids, integration of IT, etc. May be adopted.
4. The total hours to be devoted against each topic may be decided with due diligence to safety & with prioritizing transfer of required skills.
5. Questions may be set based on following instructions:-

Sl. No.	Question on different aspect	Weightage in %age	Key Words may be like
1	Information received	25	What, Who, When
2	Knowledge	50	Define, Identify, Recall, State, Write, List & Name
3	Understanding	15	Describe, Distinguish, Explain, Interpret & Summarize
4	Application	10	Apply, Compare, Demonstrate, Examine, Solve & Use

6. Due weightage to be given to all the topics under the syllabus while setting the question paper.

13. LIST OF TRADE COMMITTEE MEMBERS

Sl. No.	Name & Designation Sh/Mr./Ms.	Organization	Mentor Council Designation
Members of Sector Mentor council			
1.	Dr D.C Sexana	Professor & HOD, Food Engineering and Tech. Dept, S.L.I.E.T, Longowal, Punjab	Chairman
2.	Dr S.L Shrivastava	Professor, IndiaN Institute of Technology, Kharagpur	Member
3.	Dr. Vikas Nanda	Associate Professor, Food Engineering and Tech. Dept, S.L.I.E.T, Longowal, Punjab	Member
4.	Dr Ashok Kumar	Professor Department of Process and Food Engineering, Punjab Agriculture University, Ludhiana, Punjab	Member
5.	Dr. D.S Sogi	Professor Department of Food Science and Technology, Guru Nanak Dev University, Amritsar, Punjab	Member
6.	Dr. Neeraj Kumar	Assistant Professor, National institute of food technology Entrepreneurship & Management, Kundli, Sonipat, Haryana	Member
7.	Rakesh Kumar	Principal, Govt. I.T.I, Hajipur, Bihar	Member
8.	M.A. Tejani	Gits Foods Products Pvt.Ltd, Pune	Member
9.	Er Parduman singh	Principal, Govt. I.T.I, Nabha, Punjab	Member
10.	Dr P.S Negi	Scientist, Central Food Technological, Research Institute, Mysore	Member
11.	Rizwana Ansari (T.O)	Govt. I.T.I, Chindwara, Madhya Pradesh	Member
12.	Priti Dwivedi (T.O)	Govt. I.T.I, Chindwara, Madhya Pradesh	Member
13.	Khurseed Jamal Siddique (TO)	Govt. I.T.I, Chindwara, Madhya Pradesh	Member
14.	Sandhya Singh (TO)	Govt. I.T.I, Chindwara, Madhya	Member

		Pradesh	
15.	Ranjeeta Sharma	Principal, Maharashi Dayanand Institute of Tech. Jabalpur, M.P	Member
Mentor			
16.	J.P Meena (Director)	DGET HQ, New Delhi.	Mentor
Members of Core Group			
17.	K.L.Kulli (JDT)	CSTARI, Kolkata	Co-ordinator
18.	G.Mohan (ADT)	NIMI, Chennai.	Member
19.	Raminder Kumar (V.I)	R.V.T.I, Panipat	Team Leader
20.	Sriya Suman Patro	Lecturer, Government Polytechnic, Behrampur,Ganjam,Odisha	Member
Other industry representatives			
21.	Gagandeep Gupta	Quality Assurance Manager, International Fresh Farm Product India, Ltd,Channo, Sangrur,Punjab	Member
22.	Paramdeep Singh Ghuman	Moonak Distiller and Bottler pvt ltd, Moonak, Sangrur, Punjab	Member
23.	Vijay Singh	G.M, International Mega Food Park, Fazilka,Punjab	Member
24.	Ranveer Singh	Sr. Manufacturer Executive, I.T.C, Greater Noida, U.P	Member
25.	Rohit Verma	G.M, Jupiter multi-fruit processor Plot no 1, phase III, Industrial area Talliwal, District Una, H.P	Member