Anekant Education Society's

Tuljaram Chaturchand College of Arts, Science & Commerce, Baramati

(Autonomous)

Three/Four Year Honours/Honours with Research B.Voc. Degree

Program in Food Processing and Post Harvest Technology

CBCS Syllabus

TY B.Voc. (Food Processing and Post Harvest Technology)

For Department of Food Technology and Research

NEP-1.0

Choice Based Credit System Syllabus

(2023 Pattern)

(As Per NEP-2020)

To be implemented from Academic Year 2025-2026

Title of the Programme: TY B.Voc. (Food Processing and Post Harvest Technology))

Preamble

AES's, Tuljaram Chaturchand College of Arts, Science and Commerce (Autonomous) has made the decision to change the syllabi of across various faculties from June, 2023 by incorporating the guidelines and provisions outlined in the National Education Policy (NEP), 2020. The NEP envisions making education more holistic and effective and to lay emphasis on the integration of general (academic) education, vocational education and experiential learning. The NEP introduces holistic and multidisciplinary education that would help to develop intellectual, scientific, social, physical, emotional, ethical and moral capacities of the students. The NEP 2020 envisages flexible curricular structures and learning based outcome approach for the development of the students. By establishing a nationally accepted and internationally comparable credit structure and courses framework, the NEP 2020 aims to promote educational excellence, facilitate seamless academic mobility, and enhance the global competitiveness of Indian students. It fosters a system, where educational achievements can be recognized and valued not only within the country but also in the international arena, expanding opportunities and opening doors for students to pursue their aspirations on a global scale.

In response to the rapid advancements in science and technology and the evolving approaches in various domains of Food Technology and related subjects, the Board of Studies in Food Technology at Tuljaram Chaturchand College of Arts, Science and Commerce (Autonomous), Baramati - Pune, has developed the curriculum for the first semester of T.Y. B.Voc. Food Processing and PHT, which goes beyond traditional academic boundaries. The syllabus is aligned with the NEP 2020 guidelines to ensure that students receive an education that prepares them for the challenges and opportunities of the 21st century. This syllabus has been designed under the framework of the Choice Based Credit System (CBCS), taking into consideration the guidelines set forth by the National Education Policy (NEP) 2020, LOCF (UGC), NCrF, NHEQF, Prof. R.D. Kulkarni's Report, Government of Maharashtra's General Resolution dated 20th April and 16th May 2023, and the Circular issued by SPPU, Pune on 31st May 2023.

A Food Technology Graduates degree equips students with the knowledge and skills necessary for a diverse range of fulfilling career paths. Food Technology graduate students find opportunities in various fields, including procurement, Testing and quality, Processing and Production, Research and Development, Storage and Supply Chain Management, Food Regulatory Agencies, Auditing, Academics, Competitive exams, Biostatistics, Database analysis, Entrepreneurship Development, and many other food and food related organizations.

Throughout their Three-year degree program, students explore the significance of Farm to Fork processing by utilization of post harvest technology. They learn tool, techniques, process which is required to set up agencies including pickles, jam, and jelly, fruit processing, vegetable processing, organic product, dairy products, Bakery and Confectionery products, producing industries.

Overall, revising the Food Technology syllabi in accordance with the NEP 2020 ensures that students receive an education that is relevant, comprehensive, and prepares them to navigate the dynamic and interconnected world of today. It equips them with the knowledge, skills, and competencies needed to contribute meaningfully to society and pursue their academic and professional goals in a rapidly changing global landscape.

Programme Specific Outcomes (PSOs)

PSO1-Technical Competence: Students will acquire specialized technical skills and knowledge relevant to the food processing, enabling them to perform tasks effectively and efficiently in operating food processing machinery and quality control techniques.

PSO2-Problem Solving Skills: Students will develop the ability to identify, analyze, and solve problems encountered in food processing, using both theoretical knowledge and practical experience.

PSO3-Employability Skills: Students will gain employability skills such as communication, teamwork, leadership, adaptability, and professionalism, which are essential for success in the workplace. Student will be to work in multidisciplinary and cross-functional terms with the food industry.

PSO4-Industry Relevance and entrepreneurial abilities: The students will adopt knowledge and skills that are relevant to the current needs and required practices of the food processing sector. Students will focus to develop entrepreneurial capabilities to start and manage food based businesses including food startups and agribusiness.

PSO5-Ethical and Social Responsibility: Students will be aware of the ethical considerations and social responsibilities associated with principles in food production, safety, regulatory compliances, and they will be able to apply ethical principles in food processing practices.

PSO6-Environmental Awareness: The students should be able to ability to apply the knowledge, skills, attitudes and values required to take appropriate action for justifying the effect of environmental degradation, climate change, pollution control, effective waste management etc.

PSO7-Research and Innovations: Students may develop research and innovation skills & technological advancement in food processing. Students may contribute to the development of new products, preservation methods and food safety standards.

PSO8 -Global Perspective: Students will be able to understand global trends, international food markets and emerging technologies in the food sector. They will also gain awareness of international food safety regulation & global supply chains.

PSO9-Multidisciplinary studies: Students will adopt the multidisciplinary studies in an academic approach that integrate knowledge and methodology from various discipline such as food science, microbiology, biotechnology & management to provide a comprehensive understanding of food processing related job/business opportunities.

PSO10-Community Engagement: The students will be able to demonstrate the capability to participate in community-engaged services/activities for promoting food related services, nutritional awareness program, and reach development initiative participation in social outreach programs that promote public health, Food security, & Sustainable food products.

Anekant Education Society's
Tuljaram Chaturchand College
of Arts, Science and Commerce Baramati, Dist-Pune
(Empowered Autonomous)

Board of Studies in Food Technology and Research

(Academic Year 2025-26 to 2027-28)

Sr.No.	Name of Member	Designation
1.	**Dr. Khan Wazid A.** Head &Assistant Professor Department of Food Technology and Research, T. C. College, Baramati.	**Chairperson**
2.	**Ms. Katekar Asawari D.** Assistant Professor, Department of Food Technology and Research, T. C. College, Baramati	Member
3.	**Ms.Pawar Tilotama R.** Assistant Professor, Department of Food Technology and Research, T. C. College, Baramati	Member
4.	**Ms. Shinde Soudamini S.** Assistant Professor, Department of Food Technology and Research, T. C. College, Baramati	Member
5.	**Ms. Aarti Dongare** Assistant Professor, M.Sc. Food Science & Technology	Vice-Chancellor Nominee Subject Expert from SPPU, Pune
6.	**Mr. Gatade Abhijeet** Assistant Professor, Shivaji University, Kolhapur	Subject Expert from Outside the Parent University
7.	**Mr. Pathan Fayaz L.** Associate Professor, MIT-ADT University	Subject Expert from Outside the Parent University
8.	**Mr. Gawate Dadasaheb** Director, Di-Roma Ice-cream, Ahmad Nagar	Representative from industry/corporate sector/allied areas
9.	**Mr. Vairagal Dnyaneshwar** Schreiber Dynamix Pvt. Ltd. Baramati	Member of the College Alumni
10.	**Ms. Vhora Payal**	UG Student
11.	**Ms. Pawar Amruta**	PG Student

Anekant Education Society's
Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati.
(Empowered Autonomous) T.Y. B.Voc. Food Processing 2025-26

Sem	Course Type	Course Code	Course Title	Theory/ Practical	Credits
V	Major Mandatory	FTR-301-MJM	Dairy Technology-I	Theory	02
	Major Mandatory	FTR -302-MJM	Post Harvest Technology	Theory	02
	Major Mandatory	FTR -303-MJM	Food Quality, Laws and Regulations	Theory	02
	Major Mandatory	FTR -304-MJM	Dairy Technology-I	Practical	02
	Major Mandatory	FTR -305-MJM	Post Harvest Technology-I	Practical	02
	Major Elective (MJE)	FTR -306-MJE(A)	Plantation Crop	Theory (Any two)	04
	Major Elective (MJE)	FTR -306-MJE(B)	Beverage Technology		
	Major Elective (MJE)	FTR -306-MJE(C)	Spice Technology		
	Minor	FTR -341-MN	Cereal Technology	Theory	02
	Minor	FTR-342-MN	Cereal Technology-I	Practical	02
	Vocational Skill Course (VSC)	FTR -321-VSC	Entrepreneurship Development	Practical	02
	Field Project(FP)	FTR -335-FP	Field Project	Practical	02
	Total Credits Semester-V				**22**
VI	Major Mandatory	FTR -351-MJM	Packaging Technology	Theory	02
	Major Mandatory	FTR -352-MJM	Food Safety, Hygiene and Sanitation	Theory	02
	Major Mandatory	FTR -353-MJM	Plant Design and Layout	Theory	02
	Major Mandatory	FTR -354-MJM	Animal Product Technology	Practical	02
	Major Mandatory	FTR -355-MJM	Packaging Technology-I	Practical	02
	Major Elective(MJE)	FTR -356-MJE(A)	Meat Processing Technology	Theory (Any two)	04
	Major Elective(MJE)	FTR -356-MJE(B)	Fish Processing Technology		
	Major Elective(MJE)	FTR -356-MJE(C)	Poultry Processing Technology		
	Minor	FTR -361-MN	Pulses and Oilseed Technology	Theory	02
	Minor	FTR -362-MN	Pulses and Oilseed Technology-I	Practical	02
	On Job Training(OJT)	FTR -385-OJT	On Job Training	Practical	04
				Total Credits Semester-VI	**22**
				Total Credits Semester-V+ VI	**44**

CBCS Syllabus as per NEP 2020 for T.Y.B.Voc. Food Processing and Post Harvest Technology

(2023 Pattern)

Name of the Programme : B.Voc. Food Processing and Post Harvest Technology

Class : T.Y.B.Voc.

Semester : V

Course Type : Major Mandatory

Course Code : FTR-301-MJM

Course Title : Dairy Technology-I

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To know the need and importance of dairy industry
- To know the compositional and technological aspects of milk.
- To study processed milk products.
- To learn about the processing of Dairy plant sanitization.
- To study about the planning, layout and requirement of dairy barns.
- To understand about the working of various dairy equipments.

Course Outcomes:

On completion of the course, students will be able to:

CO1: Give a comprehensive view of the composition of milk, its chemical, physical and organoleptic properties that can be applied in technological processing of milk.

CO2: Explain the production of milk and pre-treatment of milk.

CO3: Explain the dairy processing technologies.

CO4: Apply methods of analysis for dairy products and relate differences in composition and structure to differences in manufacturing processes.

CO5: Create a dairy product and evaluate relevant physical properties.

CO6: Understand about the working of various dairy equipments.

CO7: study about the planning, layout and requirement of dairy barns.

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	-	-	1	1	1	2	1	2	-
CO2	3	1	1	-	-	-	2	-	-	-
CO3	-	-	-	-	-	-	-	2	-	-

CO4	**-**	**-**	**-**	**-**	**1**	**3**	**-**	**-**	**-**	**-**
CO5	**1**	**-**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**
CO6	**1**	**2**	**2**	**3**	**-**	**-**	**3**	**-**	**2**	**4**
CO7	**1**	**2**	**2**	**-**	**-**	**-**	**3**	**-**	**2**	**1**

Justification for the mapping

PO1- Technical Competence: Students will acquire specialized technical skills and knowledge relevant to their chosen vocation, enabling them to perform tasks effectively and efficiently in their respective industries.
CO1: Study about the history of milk
CO2: Understand about the present scenario of milk and milk products in India and Global.
CO5: Explain knowledge of the processing operations used in the dairy industry.
CO6: Study about the processing of different milk product in dairy industry.
CO7: Learn about the Supply Chain Management of Dairy Products

PO2- Problem Solving Skills: Students will develop the ability to identify, analyze, and solve problems encountered in their vocational field, using both theoretical knowledge and practical experience.
CO2: Understand about the present scenario of milk and milk products in India and Global.
CO6: Study about the processing of different milk product in dairy industry.
CO7: Learn about the Supply Chain Management of Dairy Products

PO3- Employability Skills: Students will gain employability skills such as communication, teamwork, leadership, adaptability, and professionalism, which are essential for success in the workplace.
CO2: Understand about the present scenario of milk and milk products in India and Global.
CO6: Study about the processing of different milk product in dairy industry.
CO7: Learn about the Supply Chain Management of Dairy Products

PO4- Industry Relevance and entrepreneurial abilities: The students will adopt knowledge and skills that are relevant to the current needs and required practices of the industry or sector, they are entering. Students focus on fostering entrepreneurial skills, equipping students with the knowledge and capabilities to start and manage their own businesses in their chosen field.
CO1: Study about the history of milk
CO5: Explain knowledge of the processing operations used in the dairy industry.
CO6: Study about the processing of different milk product in dairy industry.

PO5- Ethical and Social Responsibility: Students will be aware of the ethical considerations and social responsibilities associated with their vocational field, and they will be able to apply ethical principles in their professional practices.

CO1: Study about the history of milk
CO4: Understand the operations used in food processing industry.

PO6- Environmental Awareness: The students should be able to ability to apply the knowledge, skills, attitudes and values required to take appropriate action for justifying the effect of environmental degradation, climate change, pollution control, effective waste management etc.

CO1: Study about the history of milk
CO4: Understand the operations used in food processing industry.

PO7- Research and Innovations: Depending on the programme, students may develop research and innovation skills, enabling them to contribute to advancements and improvements within their vocational field.

CO1: Study about the history of milk
CO2: Understand about the present scenario of milk and milk products in India and Global.
CO6: Study about the processing of different milk product in dairy industry.
CO7: Learn about the Supply Chain Management of Dairy Products

PO8 -Global Perspective: In an increasingly interconnected world, programmes may emphasize the importance of understanding global trends, markets, and perspectives relevant to the students' vocation.

CO1: Study about the history of milk
CO3: Understand about the marketing survey of milk product.

PO9- Multidisciplinary studies: Students will adopt the multidisciplinary studies in an academic approach that integrate knowledge and methodology from various discipline to provide a comprehensive understanding of related job/business opportunities.

CO1: Study about the history of milk
CO6: Study about the processing of different milk product in dairy industry.
CO7: Learn about the Supply Chain Management of Dairy Products

PO10-Community Engagement: The students will be able to demonstrate the capability to participate in community-engaged services/activities for promoting the wellbeing of society

CO6: Study about the processing of different milk product in dairy industry.
CO7: Learn about the Supply Chain Management of Dairy Products

Topics and Learning Points

Unit-1: Livestock and dairy building: 7 Lectures

Importance of livestock, their importance species and breeds, site selection, types of dairy barn, layout and requirement of dairy barns.
Milk - composition, food and nutritive value, physico-chemical and microbiological Properties of milk

Unit-2: Milk collection and Quality analysis 8 Lectures

Milk Societies, buying and collection of milk, transportation of milk, milk reception in dairies. Quality and quantity test at reception, Judging and Grading of milk,

Unit-3: Milk processing and equipment used **8 Lectures**

Milk Processing flow sheet – Filtration / clarification, Storage of milk, Standardization, Types of pasteurization process, Sterilization of milk, Homogenizers,
Equipments used in each process - Cream separating centrifuges, Plate Heat Exchangers, Bottle and pouch fillers, Milk Chillers.

Unit-4: Technology of Dairy Products **7 Lectures**

Manufacture of Homogenized, Standardized, rehydrated, Toned Milk and Sweetened Condensed milk, Ice Cream, Cream, Paneer, Butter, Ghee, Khoa, Yoghurt, Curd, butter milk

References:

1. Sukumar Day, Outlines of Dairy Technology, Oxford University Press, Oxford.2007
2. Robinson, R.K. (2 vol.) 1986. Modern Dairy Technology. Elsevier Applied Science, UK.
3. Warner, J.M. 1976. Principles of Dairy Processing. Wiley Eastern Ltd., New Delhi.
4. Yarpar, W.J. and Hall, C.W. 1975. Dairy Technology and Engineering. AVI, Westport.
5. Rosenmal, I. 1991. Milk and Milk Products. VCH. New York.
6. Webb and Johnson, Fundamentals of Dairy Chemistry

CBCS Syllabus as per NEP 2020 for T.Y. B.Voc. Food Processing and Post Harvest Technology (2023 Pattern)

Name of the Programme : B.Voc. Food Processing and Post Harvest Technology

Class : T.Y B.Voc.

Semester : V

Course Type : Major Mandatory

Course Code : FTR-302-MJM

Course Title : Post Harvest Technology

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
- To aware the techniques related to post harvest practices.
- To learn the thorough knowledge of fruits, vegetables and plantation crops right from harvesting to the end product.
- To develop the skills for processing post harvested produce.

- To understand about the export standards for major fruits, vegetables and plantation crops.
- To study about the products and by products of plantation crops

Course Outcomes:

On completion of the course, students will be able to:

CO1: Learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
CO2: Aware the techniques related to post harvest practices.
CO3: Learn the thorough knowledge of fruits, vegetables and plantation crops right from harvesting to the end product.
CO4: Understand the skills for processing post harvested produce.
CO5: Understand about the export standards for major fruits, vegetables and plantation crops.
CO6: Study about the products and by products of plantation crops
CO7: Learn about the importance of scientific storage systems

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	5	5	4	_	_	1	_	1	2	3
CO2	6	4	4	-	-	-	2	-	-	-
CO3	-	-	-	-	-	-	-	2	-	-
CO4	-	-	-	-	1	3	-	-	-	-
CO5	1	-	1	_	-	-	-	-	-	-
CO6	1	2	2	3	-	-	3	-	2	4
CO7	1	_	2	-	-	-	3	-	2	7

Justification for the mapping

PO1- Technical Competence: Students will acquire specialized technical skills and knowledge relevant to their chosen vocation, enabling them to perform tasks effectively and efficiently in their respective industries.
CO1: Learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
CO2: Aware the techniques related to post harvest practices.
CO5: Understand about the export standards for major fruits, vegetables and plantation crops.
CO6: Study about the products and by products of plantation crops
CO7: Learn about the importance of scientific storage systems

PO2- Problem Solving Skills: Students will develop the ability to identify, analyze, and solve problems encountered in their vocational field, using both theoretical knowledge and practical experience.
CO1: Learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
CO2: Aware the techniques related to post harvest practices.
CO6: Study about the products and by products of plantation crops
CO7: Learn about the importance of scientific storage system

PO3- Employability Skills: Students will gain employability skills such as communication, teamwork, leadership, adaptability, and professionalism, which are essential for success in the workplace.
CO1: Learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
CO2: Aware the techniques related to post harvest practices.
CO5: Understand about the export standards for major fruits, vegetables and plantation crops.
CO6: Study about the products and by products of plantation crops
CO7: Learn about the importance of scientific storage systems

PO4- Industry Relevance and entrepreneurial abilities: The students will adopt knowledge and skills that are relevant to the current needs and required practices of the industry or sector, they are entering. Students focus on fostering entrepreneurial skills, equipping students with the knowledge and capabilities to start and manage their own businesses in their chosen field.
CO6: Study about the products and by products of plantation crops

PO5- Ethical and Social Responsibility: Students will be aware of the ethical considerations and social responsibilities associated with their vocational field, and they will be able to apply ethical principles in their professional practices.
CO4: Understand the skills for processing post harvested produce.

PO6- Environmental Awareness: The students should be able to ability to apply the knowledge, skills, attitudes and values required to take appropriate action for justifying the effect of environmental degradation, climate change, pollution control, effective waste management etc.
CO1: Learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
CO4: Understand the skills for processing post harvested produce.

PO7- Research and Innovations: Depending on the programme, students may develop research and innovation skills, enabling them to contribute to advancements and improvements within their vocational field.
CO2: Aware the techniques related to post harvest practices.
CO6: Study about the products and by products of plantation crops
CO7: Learn about the importance of scientific storage systems

PO8 -Global Perspective: In an increasingly interconnected world, programmes may emphasize the importance of understanding global trends, markets, and perspectives relevant to the students' vocation.

CO1: Learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
CO3: Learn the thorough knowledge of fruits, vegetables and plantation crops right from harvesting to the end product.

PO9- Multidisciplinary studies: Students will adopt the multidisciplinary studies in an academic approach that integrate knowledge and methodology from various discipline to provide a comprehensive understanding of related job/business opportunities.
CO1: Learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
CO6: Study about the products and by products of plantation crops
CO7: Learn about the importance of scientific storage systems

PO10-Community Engagement: The students will be able to demonstrate the capability to participate in community-engaged services/activities for promoting the wellbeing of society
CO1: Learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
CO6: Study about the products and by products of plantation crops
CO7: Learn about the importance of scientific storage systems

Topics and Learning Points

Unit-1: History and role of post-harvest technology; Harvesting factors and Quality- Pre-harvesting factor, Maturity of harvest, Harvesting Methods, Post-Harvest Physiology **7 Lectures**

Unit-2: Engineering Properties of agricultural Materials, Physical Properties, Mechanical Properties, thermal properties, Rheological Properties and Cleaning and Grading. **7 Lectures**

Unit-3: Cleaning, Threshing And Grading-Threshing and shelling operation, cleaning and grading, Types of separator, Cooling treatments, Pack house operations, types of size reduction, Ripening methods **8 Lectures**

Unit-4 Food storage systems- Direct Damage, Indirect damage, Sources of infestation, Traditional storage structures, improved storage structures, modern storage structures, storage of agricultural perishables, Post-harvest treatments for quality retention of horticultural crops **8 Lectures**

References:

1) Preservation of Fruits & Vegetables by Srivastava& Kumar. 1996. Intl. Book Publishing Co. Lucknow
2) Preservation of Fruits & Vegetables by Siddappa et al. 1999. ICAR, New Delhi
3) An introduction to Post Harvest Technology by RBH Wills. 2003.
4) Post Harvest Technology of Fruits & Vegetables by Verma& Joshi. 2000. Indus Publication, New Delhi
5) Hand Book of Post Harvest Technology by Chakravarty et al. 2003. Mercer-Dekker Ltd

6) Kadar, A.A. 1992. *Post-harvest Technology of Horticultural Crops*. 2nd Ed. University of California.
7) Salunkhe, D.K., Bolia, H.R. and Reddy, N.R. 1991. *Storage, Processing and Nutritional Quality of Fruits and Vegetables*. Vol. I. Fruits and Vegetables. CRC.
8) Verma, L.R. and Joshi, V.K. 2000. *Post Harvest Technology of Fruits and Vegetbales*. Indus Publ.
9) Thompson, A.K. 1995. Post harvest technology of fruits and vegetables. Blackwell Sciences.
10) Peter, K.V. 2003. Plantation Crops. NBT, New Delhi

CBCS Syllabus as per NEP 2020 for T.Y. B.Voc. Food Processing and Post Harvest Technology (2023 Pattern)

Name of the Programme	**:** B.Voc. Food Processing and Post Harvest Technology
Class	**:** T.Y B.Voc.
Semester	**:** V
Course Type	**:** Major Mandatory
Course Code	**:** FTR-303-MJM
Course Title	**:** Food Quality, Laws and Regulations
No. of Credits	**:** 02
No. of Teaching Hours	**:** 30

Course Objectives:

- To learn about quality management in food production chain.
- To understand the role of food standards and regulations in maintaining food quality.
- To learn about Government agencies, Voluntary Agencies & International Organizations and Agreements in the area of Food Standardization and quality control.
- To study about the methods of detection of some Adulterants.
- To understand about the role and responsibilities of Quality control department of food
- To study about the Sensory characteristics of food.

Course Outcomes:

On completion of the course, students will be able to:

CO1: Be able to critically evaluate the recent developments in the control of food safety.
CO2: Have an integrated view of the issues involved.
CO3: Be able to conduct risk assessments of food safety problems including genetic modification.

CO4: Demonstrate detailed knowledge of the requirements for compliance with national and international food safety legislation.
CO5: Know how to control and maintain a quality management system.
CO6: Study about the Sensory characteristics of food.
CO7: understand about the role and responsibilities of Quality control department of food

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	5	6	5	_	1	1	2	_	2	2
CO2	2	1	1	1	-	-	2	-	-	-
CO3	-	-	-	-	-	-	-	2	-	-
CO4	-	-	-	-	1	5	-	-	-	-
CO5	1	-	2	1	-	-	-	-	-	-
CO6	1	_	2	3	-	-	3	-	2	-
CO7	1	_	_	-	-	-	4	-	2	3

Justification for the mapping

PO1-Technical Competence: Students will acquire specialized technical skills and knowledge relevant to their chosen vocation, enabling them to perform tasks effectively and efficiently in their respective industries.
CO1: Be able to critically evaluate the recent developments in the control of food safety.
CO2: Have an integrated view of the issues involved.
CO5: Know how to control and maintain a quality management system.
CO6: Study about the Sensory characteristics of food.
CO7: understand about the role and responsibilities of Quality control department of food

PO2-Problem Solving Skills: Students will develop the ability to identify, analyze, and solve problems encountered in their vocational field, using both theoretical knowledge and practical experience.
CO1: Be able to critically evaluate the recent developments in the control of food safety.
CO2: Have an integrated view of the issues involved.

PO3-Employability Skills: Students will gain employability skills such as communication, teamwork, leadership, adaptability, and professionalism, which are essential for success in the workplace.
CO1: Be able to critically evaluate the recent developments in the control of food safety.
CO2: Have an integrated view of the issues involved.
CO5: Know how to control and maintain a quality management system.

CO6: Study about the Sensory characteristics of food.

PO4-Industry Relevance and entrepreneurial abilities: The students will adopt knowledge and skills that are relevant to the current needs and required practices of the industry or sector, they are entering. Students focus on fostering entrepreneurial skills, equipping students with the knowledge and capabilities to start and manage their own businesses in their chosen field.

CO2: Have an integrated view of the issues involved.

CO5: Know how to control and maintain a quality management system.

CO6: Study about the Sensory characteristics of food.

PO5-Ethical and Social Responsibility: Students will be aware of the ethical considerations and social responsibilities associated with their vocational field, and they will be able to apply ethical principles in their professional practices.

CO1: Be able to critically evaluate the recent developments in the control of food safety.

CO4: Demonstrate detailed knowledge of the requirements for compliance with national and international food safety legislation.

PO6-Environmental Awareness: The students should be able to ability to apply the knowledge, skills, attitudes and values required to take appropriate action for justifying the effect of environmental degradation, climate change, pollution control, effective waste management etc.

CO1: Be able to critically evaluate the recent developments in the control of food safety.

CO4: Demonstrate detailed knowledge of the requirements for compliance with national and international food safety legislation.

PO7-Research and Innovations: Depending on the programme, students may develop research and innovation skills, enabling them to contribute to advancements and improvements within their vocational field.

CO1: Be able to critically evaluate the recent developments in the control of food safety.

CO2: Have an integrated view of the issues involved.

CO6: Study about the Sensory characteristics of food.

CO7: understand about the role and responsibilities of Quality control department of food

PO8 -Global Perspective: In an increasingly interconnected world, programmes may emphasize the importance of understanding global trends, markets, and perspectives relevant to the students' vocation.

CO3: Be able to conduct risk assessments of food safety problems including genetic modification.

PO9-Multidisciplinary studies: Students will adopt the multidisciplinary studies in an academic approach that integrate knowledge and methodology from various discipline to provide a comprehensive understanding of related job/business opportunities.

CO1: Be able to critically evaluate the recent developments in the control of food safety.

CO6: Study about the Sensory characteristics of food.

CO7:understand about the role and responsibilities of Quality control department of food

PO10-Community Engagement: The students will be able to demonstrate the capability to participate in community-engaged services/activities for promoting the wellbeing of society

CO1: Be able to critically evaluate the recent developments in the control of food safety.

CO7: understand about the role and responsibilities of Quality control department of food

Topics and Learning Points

Unit-1: Food Quality: Definition, quality concepts, quality perception, quality attributes, safety, health, sensory, shelf life, convenience.
Evaluation of Food quality: Definition, Quality attributes of food, Sensory characteristics of Food, Sensory tests, Instruments used for colour & texture evaluation, microbial quality of food. **5 Lectures**

Unit-2: Quality control and Effect of processing and storage on quality of food: Quality control of food, Role and responsibilities of Quality control department of food industry, Effect of processing on Quality of Food, Effect of storage on Quality of Food. **5 Lectures**

Unit-3: Food Laws and Standards: Food Safety and Standards Act, Food Standards and regulations in India, Prevention of Food Adulteration Act, Food Safety Standard Authority of India (FSSAI).
Compulsory National Legislations: Essential Commodities Act, Standards of Weights and Measures, Export (Quality control and Inspection) Act
Voluntary based Product Certifications: Bureau of Indian Standards Act, Agmark Grading and Marketing Act and Rules Nutritional Labelling & Education act. **10 Lectures**

Unit-4: Consumer Protection
Government agencies: Municipal Laboratories, Food and Drug Administration, The central Food Testing Laboratory, Export Inspection Council Laboratory
Voluntary Agencies: Quality control laboratories of companies, Quality control laboratories of Consumer co-operatives, Private testing laboratories, Consumer Guidance Society
International Organizations and Agreements in the area of Food Standardization and quality control: Codex Alimentarius, Codex India, World Health Organization, International Organization for Standardization, Food and Agriculture Organization, Joint FAO/WHO Expert committee on food additives, British Retail Consortium(BRC) standard for Foods.
10 Lectures

References:

1. Food Science – Norman N. Potter, Joseph H. Hotchkiss CBS Publishers and distributors, New Delhi, 1997 5th edition.
2. Cereal technology – Matz.
3. Manay NS and Shadaksharaswamy M, Food-Facts and Principles, New Age International (P) Ltd. Publishers, New Delhi, 1987
4. Quality Control for Food Industry Krammer&Twigg
5. Quality Control in Food Industry S.N. Herschdogrfer
6. B. Srilakshmi, Food science, New Age Publishers, 2002
7. Tannenbaum, S.R. Ed. 1979. “Nutritional and Safety Aspects of Food Processing”, Marcel
8. Pieternel A, Luning, Willem J. Marcelis, Food Quality Management Technological and Managerial principles and practices, Wageningen,2009.

CBCS Syllabus as per NEP 2020 for T.Y B.Voc. Food Processing and Post Harvest Technology

(2023 Pattern)

Name of the Programme : B.Voc. Food Processing and Post Harvest Technology

Class : T.Y B.Voc.

Semester : V

Course Type : Major Mandatory

Course Code : FTR-304-MJM

Course Title : Practical of Dairy Technology-I

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To know the need and importance of dairy industry
- To know the compositional and technological aspects of milk.
- To study processed milk products.
- To learn about the chemical analysis of milk.
- To study about the processing of different milk based products.
- To understand about the working of various dairy equipments.

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Course Outcomes:

By the end of the course, students will be able to:

On completion of the course, students will be able to:

CO1: Give a comprehensive view of the composition of milk, its chemical, physical and organoleptic properties that can be applied in technological processing of milk.
CO2: Explain the production of milk and pre-treatment of milk.
CO3: Explain the dairy processing technologies.
CO4:study about theprocessing of different milk based products.
CO5: Create a dairy product and evaluate relevant physical properties.
CO6: Understand about the chemical analysis of milk.
CO7: study about the methods of detection of adulteration in milk

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1	-	-	3	3	_	**2**	**1**	_	-
CO2	_	1	_	-	-	1	4	1	-	**2**
CO3	3	-	2	-	-	1	-	**2**	-	**1**

CO4	6	7	6	**-**	**1**	**3**	**-**	**-**	**-**	**-**
CO5	2	4	3	_	**-**	**-**	**-**	**-**	**-**	**-**
CO6	6	6	5	**3**	**-**	**-**	**3**	**-**	**2**	**-**
CO7	_	**2**	**2**	**-**	**-**	**-**	**3**	**-**	**2**	**-**

Justification for mapping

PO1-Technical Competence: Students will acquire specialized technical skills and knowledge relevant to their chosen vocation, enabling them to perform tasks effectively and efficiently in their respective industries.

CO1: Study about the history of milk

CO3: Understand about the marketing survey of milk product.

CO4: Understand the operations used in food processing industry.

CO5: Explain knowledge of the processing operations used in the dairy industry.

CO6: Study about the processing of different milk product in dairy industry.

PO2-Problem Solving Skills: Students will develop the ability to identify, analyze, and solve problems encountered in their vocational field, using both theoretical knowledge and practical experience.

CO2: Understand about the present scenario of milk and milk products in India and Global.

CO4: Understand the operations used in food processing industry.

CO5: Explain knowledge of the processing operations used in the dairy industry.

CO6: Study about the processing of different milk product in dairy industry.

CO7: Learn about the plant layout design of milk industries

PO3-Employability Skills: Students will gain employability skills such as communication, teamwork, leadership, adaptability, and professionalism, which are essential for success in the workplace.

CO3: Understand about the marketing survey of milk product.

CO4: Understand the operations used in food processing industry.

CO5: Explain knowledge of the processing operations used in the dairy industry.

CO6: Study about the processing of different milk product in dairy industry.

CO7: Learn about the plant layout design of milk industries

PO4-Industry Relevance and entrepreneurial abilities: The students will adopt knowledge and skills that are relevant to the current needs and required practices of the industry or sector, they are entering. Students focus on fostering entrepreneurial skills, equipping students with the knowledge and capabilities to start and manage their own businesses in their chosen field.

CO1: Study about the history of milk

CO6: Study about the processing of different milk product in dairy industry.

PO5- Ethical and Social Responsibility: Students will be aware of the ethical considerations and social responsibilities associated with their vocational field, and they will be able to apply ethical principles in their professional practices.

CO1: Study about the history of milk
CO4: Understand the operations used in food processing industry.

PO6- Environmental Awareness: The students should be able to ability to apply the knowledge, skills, attitudes and values required to take appropriate action for justifying the effect of environmental degradation, climate change, pollution control, effective waste management etc.

CO2: Understand about the present scenario of milk and milk products in India and Global.
CO3: Understand about the marketing survey of milk product.
CO4: Understand the operations used in food processing industry.

PO7- Research and Innovations: Depending on the programme, students may develop research and innovation skills, enabling them to contribute to advancements and improvements within their vocational field.

CO1: Study about the history of milk
CO2: Understand about the present scenario of milk and milk products in India and Global.
CO6: Study about the processing of different milk product in dairy industry.
CO7: Learn about the plant layout design of milk industries

PO8 -Global Perspective: In an increasingly interconnected world, programmes may emphasize the importance of understanding global trends, markets, and perspectives relevant to the students' vocation.

CO1: Study about the history of milk
CO2: Understand about the present scenario of milk and milk products in India and Global.
CO3: Understand about the marketing survey of milk product.

PO9- Multidisciplinary studies: Students will adopt the multidisciplinary studies in an academic approach that integrate knowledge and methodology from various discipline to provide a comprehensive understanding of related job/business opportunities.

CO6: Study about the processing of different milk product in dairy industry.
CO7: Learn about the plant layout design of milk industries

PO10-Community Engagement: The students will be able to demonstrate the capability to participate in community-engaged services/activities for promoting the wellbeing of society

CO2: Understand about the present scenario of milk and milk products in India and Global.
CO3: Understand about the marketing survey of milk product.

Topics and Learning Points

Sr. No.	Practicals Name	Periods
1.	Preparation of Condensed Milk	2P
2.	Preparation of Basundi	2P
3.	Preparation of flavour milk	2P
4.	Preparation of Dahi and Lassi	2P
5.	Preparation of Butter milk	2P
6.	Preparation of Butter	2P
7.	Preparation of Khoa	2P
8.	Preparation of Gulabjamun	2P
9.	Preparation of Chhana	2P
10.	Preparation of Shrikhand	2P
11.	Preparation of Paneer	2P
12.	Preparation of Kalakand	2P
13.	Preparation of Rasgulla	2P
14.	Preparation of Rabadi	2P
15.	Preparation of Ice-Cream	2P

References:

1. De Sukumar, Outlines of Dairy Technology, Oxford University Press, Oxford.2007
2. Robinson, R.K. (2 vol.) 1986. Modern Dairy Technology. Elsevier Applied Science, UK.
3. Warner, J.M. 1976. Principles of Dairy Processing. Wiley Eastern Ltd., New Delhi.
4. Yarpar, W.J. and Hall, C.W. 1975. Dairy Technology and Engineering. AVI, Westport.
5. Rosenmal, I. 1991. Milk and Milk Products. VCH. New York.
6. Webb and Johnson, Fundamentals of Dairy Chemistry

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Name of the Programme : B.Voc. Food Processing and Post Harvest Technology

Class : T.Y B.Voc.

Semester : V

Course Type : Major Mandatory

Course Code : FTR-305-MJM

Course Title : Practical of Post Harvest Technology-I

No. of Credits : 02

No. of Teaching Hours **:** 30

Course Objectives:

- To learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
- To aware the techniques related to post harvest practices.
- To learn the thorough knowledge of fruits, vegetables and plantation crops right from harvesting to the end product.
- To develop the skills for processing post harvested produce.
- To understand about the export standards for major fruits, vegetables and plantation crops.
- To study about theproducts and by products of plantation crops

Course Outcomes:

On completion of the course, students will be able to:

CO1: Learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
CO2: Aware the techniques related to post harvest practices.
CO3: Learn the thorough knowledge of fruits, vegetables and plantation crops right from harvesting to the end product.
CO4: Understand the skills for processing post harvested produce.
CO5: Understand about the export standards for major fruits, vegetables and plantation crops.
CO6: Study about the products and by products of plantation crops
CO7: Learn about the importance of scientific storage systems

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	5	5	4	_	_	1	_	1	2	-
CO2	6	4	4	-	-	-	2	-	-	4
CO3	-	-	-	-	-	-	-	2	-	-
CO4	-	-	-	-	1	3	-	-	-	-
CO5	1	-	1	_	-	-	-	-	-	-
CO6	1	2	2	3	-	-	3	-	2	-
CO7	1	_	2	-	-	-	3	-	2	3

Justification for the mapping

PO1- Technical Competence: Students will acquire specialized technical skills and knowledge relevant to their chosen vocation, enabling them to perform tasks effectively and efficiently in their respective industries.
CO1: Learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
CO2: Aware the techniques related to post harvest practices.
CO5: Understand about the export standards for major fruits, vegetables and plantation crops.
CO6: Study about the products and by products of plantation crops
CO7: Learn about the importance of scientific storage systems

PO2- Problem Solving Skills: Students will develop the ability to identify, analyze, and solve problems encountered in their vocational field, using both theoretical knowledge and practical experience.
CO1: Learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
CO2: Aware the techniques related to post harvest practices.
CO6: Study about the products and by products of plantation crops
CO7: Learn about the importance of scientific storage system

PO3- Employability Skills: Students will gain employability skills such as communication, teamwork, leadership, adaptability, and professionalism, which are essential for success in the workplace.
CO1: Learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
CO2: Aware the techniques related to post harvest practices.
CO5: Understand about the export standards for major fruits, vegetables and plantation crops.
CO6: Study about the products and by products of plantation crops
CO7: Learn about the importance of scientific storage systems

PO4- Industry Relevance and entrepreneurial abilities: The students will adopt knowledge and skills that are relevant to the current needs and required practices of the industry or sector, they are entering. Students focus on fostering entrepreneurial skills, equipping students with the knowledge and capabilities to start and manage their own businesses in their chosen field.
CO6: Study about the products and by products of plantation crops

PO5- Ethical and Social Responsibility: Students will be aware of the ethical considerations and social responsibilities associated with their vocational field, and they will be able to apply ethical principles in their professional practices.
CO4: Understand the skills for processing post harvested produce.

PO6- Environmental Awareness: The students should be able to ability to apply the knowledge, skills, attitudes and values required to take appropriate action for justifying the effect of environmental degradation, climate change, pollution control, effective waste management etc.
CO1: Learn about the importance of post-harvest technology in fruits vegetables and horticultural produce

CO4: Understand the skills for processing post harvested produce.

PO7- Research and Innovations: Depending on the programme, students may develop research and innovation skills, enabling them to contribute to advancements and improvements within their vocational field.
CO2: Aware the techniques related to post harvest practices.
CO6: Study about the products and by products of plantation crops
CO7: Learn about the importance of scientific storage systems

PO8 -Global Perspective: In an increasingly interconnected world, programmes may emphasize the importance of understanding global trends, markets, and perspectives relevant to the students' vocation.
CO1: Learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
CO3: Learn the thorough knowledge of fruits, vegetables and plantation crops right from harvesting to the end product.

PO9- Multidisciplinary studies: Students will adopt the multidisciplinary studies in an academic approach that integrate knowledge and methodology from various discipline to provide a comprehensive understanding of related job/business opportunities.
CO1: Learn about the importance of post-harvest technology in fruits vegetables and horticultural produce
CO6: Study about the products and by products of plantation crops
CO7: Learn about the importance of scientific storage systems

PO10-Community Engagement: The students will be able to demonstrate the capability to participate in community-engaged services/activities for promoting the wellbeing of society
CO7: Learn about the importance of scientific storage systems
CO2: Aware the techniques related to post harvest practices.

Topics and Learning Points

1

Sr. No.	Practicals Name	Periods
1.	Study the maturity indices of various fruits and vegetables	2P
2.	To study the cleaning methods used for fruit and vegetable	2P
3.	To study the types of grader	2P
4.	To study the types of separator	2P
5.	To learn about cooling methods	2P
6.	To study the ripening agents	2P
7.	To study the post harvest waste management	2P
8.	To study the properties of harvest	2P
9.	To study quality analysis of fruit & Vegetable	2P
10.	To study the types of packaging material used for harvested crop	2P
11.	Preparation of cereal base food	2P
12.	Preparation of pulses base food	2P
13.	Preparation fruit based food	2P
14.	Preparation of vegetable base food	2P
15.	Visit to field or farm and make report	2P

References:

- Preservation of Fruits & Vegetables by Srivastava& Kumar. 1996. Intl. Book Publishing Co. Lucknow
- Preservation of Fruits & Vegetables by Siddappa et al. 1999. ICAR, New Delhi
- An introduction to Post Harvest Technology by RBH Wills. 2003.
- Post Harvest Technology of Fruits & Vegetables by Verma& Joshi. 2000. Indus Publication, New Delhi
- Hand Book of Post Harvest Technology by Chakravarty et al. 2003. Mercer-Dekker Ltd
- Kadar, A.A. 1992. *Post-harvest Technology of Horticultural Crops*. 2nd Ed. University of California.
- Salunkhe, D.K., Bolia, H.R. and Reddy, N.R. 1991. *Storage, Processing and Nutritional Quality of Fruits and Vegetables*. Vol. I. Fruits and Vegetables. CRC.
- Verma, L.R. and Joshi, V.K. 2000. *Post Harvest Technology of Fruits and Vegetbales*. Indus Publ.
- Thompson, A.K. 1995. Post harvest technology of fruits and vegetables. Blackwell Sciences.
- Peter, K.V. 2003. Plantation Crops. NBT, New Delhi

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Name of the Programme : B.Voc. Food Processing and Post Harvest Technology

Class : T.Y B.Voc.

Semester : V

Course Type : Major Elective

Course Code : FTR-306-MJE(A)

Course Title : Plantation Crop

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To impart knowledge of understanding of various food plantation techniques
- To learn about nutritional importance of fruits, vegetable and plantation crops
- To learn about processing of various spices, tea, coffee and cocoa.
- To study about various nutritional value and health benefits food plantation crops
- To study about various types of plantation crops.
- To study know History & Origin food plantation crops

Course Outcomes:

By the end of the course, students will be able to:

CO1: Students will have a thorough understanding of various food plantation techniques.
CO2: The students will know the nutritional importance of Plantation Crops
CO3: The students will know about nutritional value and health benefits food plantation crops
CO4: The students will know History & Origin food plantation crops
CO5: The students will know about composition and nutritional value of tea, coffee & Cocoa
CO6: The students will know about composition and nutritional value of spics & condiments
CO7: The students will know various types of various plantation crops.

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	6	5	5	4	2	3	-	2	-	-
CO2	-	-	-	-	2	-	-	-	-	-
CO3	2	-	-	-	4	-	-	-	-	-
CO4	-	-	-	-	4	-	-	2	2	1
CO5	-	-	-	2	1	3	-	-	-	-
CO6	1	-	2	2	1	3	-	-	-	-

CO7	**-**	**-**	**-**	**2**	**4**	**6**	**-**	**2**	**1**	**-**

Justification for mapping

PO1-Technical Competence: Students will acquire specialized technical skills and knowledge relevant to their chosen vocation, enabling them to perform tasks effectively and efficiently in their respective industries.
CO1: Students will have a thorough understanding of various food plantation techniques.
CO3: The students will know about nutritional value and health benefits food plantation crops
CO6: The students will know about composition and nutritional value of spics & condiments

PO2-Problem Solving Skills: Students will develop the ability to identify, analyze, and solve problems encountered in their vocational field, using both theoretical knowledge and practical experience.
CO1: Students will have a thorough understanding of various food plantation techniques.

PO3-Employability Skills: Students will gain employability skills such as communication, teamwork, leadership, adaptability, and professionalism, which are essential for success in the workplace.
CO1: Students will have a thorough understanding of various food plantation techniques.
CO6: The students will know about composition and nutritional value of spics & condiments

PO4-Industry Relevance and entrepreneurial abilities: The students will adopt knowledge and skills that are relevant to the current needs and required practices of the industry or sector, they are entering. Students focus on fostering entrepreneurial skills, equipping students with the knowledge and capabilities to start and manage their own businesses in their chosen field.
CO1: Students will have a thorough understanding of various food plantation techniques.
CO5: The students will know about composition and nutritional value of tea, coffee & Cocoa
CO6: The students will know about composition and nutritional value of spics & condiments
CO7: The students will know various types of various plantation crops.

PO5-Ethical and Social Responsibility: Students will be aware of the ethical considerations and social responsibilities associated with their vocational field, and they will be able to apply ethical principles in their professional practices.
CO1: Students will have a thorough understanding of various food plantation techniques.
CO2: The students will know the nutritional importance of Plantation Crops
CO3: The students will know about nutritional value and health benefits food plantation crops
CO4: The students will know History & Origin food plantation crops
CO5: The students will know about composition and nutritional value of tea, coffee & Cocoa
CO6: The students will know about composition and nutritional value of spics & condiments
CO7: The students will know various types of various plantation crops.

PO6-Environmental Awareness: The students should be able to ability to apply the knowledge, skills, attitudes and values required to take appropriate action for justifying

the effect of environmental degradation, climate change, pollution control, effective waste management etc.
CO1: Students will have a thorough understanding of various food plantation techniques.
CO5: The students will know about composition and nutritional value of tea, coffee & Cocoa
CO6: The students will know about composition and nutritional value of spics & condiments
CO7: The students will know various types of various plantation crops.

PO8 -Global Perspective: In an increasingly interconnected world, programmes may emphasize the importance of understanding global trends, markets, and perspectives relevant to the students' vocation.
CO1: Students will have a thorough understanding of various food plantation techniques.
CO4: The students will know History & Origin food plantation crops
CO7: The students will know various types of various plantation crops.

PO9-Multidisciplinary studies: Students will adopt the multidisciplinary studies in an academic approach that integrate knowledge and methodology from various discipline to provide a comprehensive understanding of related job/business opportunities.
CO4: The students will know History & Origin food plantation crops
CO7: The students will know various types of various plantation crops.

PO10-Community Engagement: The students will be able to demonstrate the capability to participate in community-engaged services/activities for promoting the wellbeing of society
CO4: The students will know History & Origin food plantation crops
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Topics and Learning Points

Unit 1: Introduction to plantation Crops **8 Lectures**
Introduction, History & Origin– (Tea, Coffee, Cocoa, Spices), Definition, Scope & Importance of Plantation Crops, Role of plantation Crops, Inter crops and Mixed crops.

Unit 2: Tea & Coffee **8 Lectures**
Introduction, Classification, Composition, manufacturing process of Tea and Coffee and **Advantage** & Disadvantages.

Unit 3: Cocoa Processing **7 Lectures**
History, Introduction, Classification, Composition, manufacturing process of Cocoa, Cocoa Liquor, Cocoa Butter Cocoa Powder, Advantage & Disadvantages of Cocoa

Unit-4: Spices and Condiments **7 Lectures**
History, Introduction, Definition, Importance, Uses of spices and Condiments, Classification, Composition: Major and Minor Spices

References:

- Subbulakshi G ,Udapi shobha A, (2001) ,food processing and preservation , New age international (P) limited , publisher
- Srivastava R.P, Kumar Sanjeev (1994) ,Fruits and vegetable preservation , first edition, International book distributing co.
- S. Rangnna (1977) ,Handbook of Analysis and quality control for fruit and vegetable products (second edition) ,Tata Mcgraw –hill publishing co. limited
- Loesecke H.W.V. (2005), Drying and dehydration of foods, Updesh purohit for agrobios (India) jodhpur.
- S. Saraswathy , T.L.preethi , S.Balsubramanyan , J.suresh ,N. Revanthy and S. naarajan (2008) : Post harvest Management of Horticulture Crops , Dr, Updesh
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- Bhatiya Vijaya (2004),Preservation of fruit and vegetables, 2nd edition, Kalyani publishers
- Banerjee B. 2002. Tea Production and Processing. Oxford Univ. Press.
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- NIIR. 2004. Handbook on Spices. National Institute of Industrial Research Board, Asia Pacific Business Press Inc

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Name of the Programme : B.Voc. Food Processing and Post Harvest Technology

Class : T.Y B.Voc.

Semester : V

Course Type : Major Elective

Course Code : FTR_306-MJE (B)

Course Title : Beverage Technology

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To develop the skills for processing of different types of alcoholic and non-alcoholic beverages,
- To get knowledge of packaged drinking water manufacturing industry.
- To learn about water purification.
- To know about FSSAI specifications for beverages.
- To study the history &importance of beverages

- To know about different types of beverages found in Indian as well as international market.

Course Outcomes:

By the end of the course, students will be able to:

CO1: Students will be able to know different types of beverages found in Indian as well as international market.
CO2: Students will have better ideas regarding alcoholic and non-alcoholic beverages with water industry.
CO3: Students will have thorough knowledge of processing techniques used in beverage industry.
CO4: Students will learn about the history of beverages
CO5: Students will learn about FSSAI specifications for beverages
CO6: Students will learn about quality of beverages.
CO7: Students will learn about history & importance of beverages

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	-	-	-	3	3
CO2	1	1	-	-	-	3	-	-	-	1
CO3	-	1	-	2	1	-	-	3	-	-
CO4	1	-	2	-	-	-	1	-	-	1
CO5	-	-	-	3	-	3	2	-	-	-
CO6	2	-	-	2	-	3	2	-	1	2
CO7	-	-	1	3	2	3	-	1	-	-

Justification for the mapping

PO1-Technical Competence: Students will acquire specialized technical skills and knowledge relevant to their chosen vocation, enabling them to perform tasks effectively and efficiently in their respective industries.
CO3: Students will have thorough knowledge of processing techniques used in beverage industry.
CO6: Students will learn about quality of beverages.

PO2-Problem Solving Skills: Students will develop the ability to identify, analyze, and solve problems encountered in their vocational field, using both theoretical knowledge and practical experience
CO5: Students will learn about FSSAI specifications for beverages
CO6: Students will learn about quality of beverages.
CO7: Students will learn about history &importance of beverages

PO3-Employability Skills: Students will gain employability skills such as communication, teamwork, leadership, adaptability, and professionalism, which are essential for success in the workplace

CO1: Students will be able to know different types of beverages found in Indian as well as international market.

CO2: Students will have better ideas regarding alcoholic and non-alcoholic beverages with water industry.

CO3: Students will have thorough knowledge of processing techniques used in beverage industry.

PO4-Industry Relevance and entrepreneurial abilities: The students will adopt knowledge and skills that are relevant to the current needs and required practices of the industry or sector, they are entering. Students focus on fostering entrepreneurial skills, equipping students with the knowledge and capabilities to start and manage their own businesses in their chosen field.

CO2: Students will have better ideas regarding alcoholic and non-alcoholic beverages with water industry.

CO3: Students will have thorough knowledge of processing techniques used in beverage industry.

PO5-Ethical and Social Responsibility: Students will be aware of the ethical considerations and social responsibilities associated with their vocational field, and they will be able to apply ethical principles in their professional practices.

CO4: Students will learn about the history of beverages

CO7: Students will learn about history &importance of beverages

PO6-Environmental Awareness: The students should be able to ability to apply the knowledge, skills, attitudes and values required to take appropriate action for justifying the effect of environmental degradation, climate change, pollution control, effective waste management etc.

CO5: Students will learn about FSSAI specifications for beverages

CO6: Students will learn about quality of beverages.

PO7-Research and Innovations: Depending on the programme, students may develop research and innovation skills, enabling them to contribute to advancements and improvements within their vocational field.

CO1: Students will be able to know different types of beverages found in Indian as well as international market.

CO2: Students will have better ideas regarding alcoholic and non-alcoholic beverages with water industry.

CO3: Students will have thorough knowledge of processing techniques used in beverage industry.

PO8 -Global Perspective: In an increasingly interconnected world, programmes may emphasize the importance of understanding global trends, markets, and perspectives relevant to the students' vocation.

CO6: Students will learn about quality of beverages.

CO7: Students will learn about history & importance of beverages

PO9-Multidisciplinary studies: Students will adopt the multidisciplinary studies in an academic approach that integrate knowledge and methodology from various discipline to provide a comprehensive understanding of related job/business opportunities.
CO2: Students will have better ideas regarding alcoholic and non-alcoholic beverages with water industry.
CO3: Students will have thorough knowledge of processing techniques used in beverage industry.

PO10-Community Engagement: The students will be able to demonstrate the capability to participate in community-engaged services/activities for promoting the wellbeing of society
CO6: Students will learn about quality of beverages.
CO7: Students will learn about history & importance of beverages

Topics and Learning Points

Unit 1: Introduction **5 lectures**
Introduction, History, importance and status of beverage and beverage industry

Unit-2: Processing of Beverages **10 lectures**
FSSAI specifications for beverages, Ingredients, manufacturing and packaging processes and equipment for different beverages
Sweeteners, colorants, Acidulants, clouding and clarifying and flavouring agents for beverages, Carbon dioxide and carbonation, Quality tests and control in beverages,
Equipments used in beverage industry

10 lectures

Unit-3: Types of beverages
Alcoholic, non-alcoholic, fermented, fruit based, vegetable based

Unit-4: Water treatment **5 lectures**
Water treatment and quality of process water, water purification, packaged drinking water Processing

References:

1. Fruit & Vegetable Preservation, Shrivastava
2. Food Science , Norman Potter
3. Food Facts & Principles, Shakuntala Maney

CBCS Syllabus as per NEP 2020 for T.Y.B.Voc. Food Processing and Post Harvest Technology (2023 Pattern)

Name of the Programme : B.Voc. Food Processing and Post Harvest Technology

Class : T.Y B.Voc.

Semester : V

Course Type : Major Elective

Course Code : FTR_306-MJE (C)

Course Title : Spice Technology

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To learn about the cultivation of spices
- To study the history of spices.
- To study about the climatic and soil requirements for spice cultivation.
- To learn about important cooking techniques used in spice processing.
- To study the quality control and standards of spices and oleoresins.
- To learn about application of different spices.

Course Outcomes:

By the end of the course, students will be able to:

CO1: Students will get knowledge about the cultivation of spices.
CO2: Students will have a thorough understanding of important cooking techniques used in spice processing.
CO3: The students will know the history of spices.
CO4: Student will learn about the climatic and soil requirements for spice cultivation.
CO5: Students will study the quality control and standards of spices and oleoresins.
CO6: Students will learn about application of different spices.
CO7: Students will get knowledge about the different spice based product.

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	-	-	-	3	3
CO2	1	1	-	-	-	3	-	-	-	1
CO3	-	1	-	2	1	-	-	3	-	-
CO4	1	-	2	-	-	-	1	-	-	1
CO5	-	-	-	3	-	3	2	-	-	-
CO6	2	-	-	2	-	3	2	-	1	2
CO7	-	-	1	3	2	3	-	1	-	-

Justification for the mapping

PO1-Technical Competence: Students will acquire specialized technical skills and knowledge relevant to their chosen vocation, enabling them to perform tasks effectively and efficiently in their respective industries.
CO2: Students will have a thorough understanding of important cooking techniques used in spice processing.
CO5: Students will study the quality control and standards of spices and oleoresins.
CO6: Students will learn about application of different spices.

PO2-Problem Solving Skills: Students will develop the ability to identify, analyze, and solve problems encountered in their vocational field, using both theoretical knowledge and practical experience
CO5: Students will study the quality control and standards of spices and oleoresins.

PO3-Employability Skills: Students will gain employability skills such as communication, teamwork, leadership, adaptability, and professionalism, which are essential for success in the workplace
CO2: Students will have a thorough understanding of important cooking techniques used in spice processing.
CO6: Students will learn about application of different spices.
CO7: Students will get knowledge about the different spice based product.

PO4-Industry Relevance and entrepreneurial abilities: The students will adopt knowledge and skills that are relevant to the current needs and required practices of the industry or sector, they are entering. Students focus on fostering entrepreneurial skills, equipping students with the knowledge and capabilities to start and manage their own businesses in their chosen field.
CO2: Students will have a thorough understanding of important cooking techniques used in spice processing.
CO6: Students will learn about application of different spices.
CO7: Students will get knowledge about the different spice based product.

PO5-Ethical and Social Responsibility: Students will be aware of the ethical considerations and social responsibilities associated with their vocational field, and they will be able to apply ethical principles in their professional practices.
CO1: Students will get knowledge about the cultivation of spices.
CO3: The students will know the history of spices.
CO4: Student will learn about the climatic and soil requirements for spice cultivation

PO6-Environmental Awareness: The students should be able to ability to apply the knowledge, skills, attitudes and values required to take appropriate action for justifying the effect of environmental degradation, climate change, pollution control, effective waste management etc.
CO1: Students will get knowledge about the cultivation of spices.
CO3: The students will know the history of spices.
CO4: Student will learn about the climatic and soil requirements for spice cultivation

PO7-Research and Innovations: Depending on the programme, students may develop research and innovation skills, enabling them to contribute to advancements and improvements within their vocational field.
CO6: Students will learn about application of different spices.
CO7: Students will get knowledge about the different spice based product.
CO2: Students will have a thorough understanding of important cooking techniques used in spice processing.

PO8 -Global Perspective: In an increasingly interconnected world, programmes may emphasize the importance of understanding global trends, markets, and perspectives relevant to the students' vocation.
CO6: Students will learn about application of different spices.
CO7: Students will get knowledge about the different spice based product.
CO2: Students will have a thorough understanding of important cooking techniques used in spice processing

PO9-Multidisciplinary studies: Students will adopt the multidisciplinary studies in an academic approach that integrate knowledge and methodology from various discipline to provide a comprehensive understanding of related job/business opportunities.
CO6: Students will learn about application of different spices.
CO7: Students will get knowledge about the different spice based product.
CO2: Students will have a thorough understanding of important cooking techniques used in spice processing

PO10-Community Engagement: The students will be able to demonstrate the capability to participate in community-engaged services/activities for promoting the wellbeing of society
CO1: Students will get knowledge about the cultivation of spices.
CO3: The students will know the history of spices.
CO4: Student will learn about the climatic and soil requirements for spice cultivation

Topics and Learning Points

Unit- I: Introduction to Spices and Condiments: 8 lectures

Definition and Importance, Historical and Cultural Significance, Global Spice Production and Trade, Climatic and Soil Requirements

Unit- II: Specific Spice Crops: 7 lectures

Major Spices, Minor Spices

Unit- III: Spice Processing and Technology: 8 lectures

Pre-Treatments, Drying and Curing, Grinding and Milling, Extraction of Spice Oils and Oleoresins, Packaging and Storage, Spice Blending and Formulation, Quality Control and Standards, Food Safety and Hygiene:

Unit- IV: Spice Products and Applications: 7 lectures

Spice Powders and Masala, Spice Oils and Oleoresins, Spice-Based Food Products, Spice-Based Beverages

References:

- Food Facts & Principles – N. Shakuntala Manay, M. Shadaksharswamy
- A History of Food in India- Colleen Taylor Sen

- Srivastava R.P, Kumar Sanjeev (1994), Fruits and vegetable preservation, first edition, International book distributing co.
- Food Science and Nutrition (Third Edition) - Sunetra Rodey

CBCS Syllabus as per NEP 2020 for T.Y.B.Voc. Food Processing and Post Harvest Technology (2023 Pattern)

Name of the Programme : B.Voc. Food Processing and Post Harvest Technology

Class : T.Y B.Voc.

Semester : V

Course Type : Minor

Course Code : FTR-341-MN

Course Title : Cereal Technology

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To understand the composition of cereals.
- To understand the processing of cereal based product.
- To learn about milling of cereals.
- To develop different types of breakfast cereals
- To study different products of snack
- To learn about extrusion technology.

Course Outcomes:

By the end of the course, students will be able to:

CO1: Students will have a thorough understanding the composition of cereals.
CO2: The students will understand the processing of cereal based product.
CO3: The students will know about milling of cereals.
CO4: Students will develop different types of breakfast cereals
CO5: The students will know about study different products of snack
CO6: Students will know learn about extrusion technology
CO7: Students will know role of different types of Ready-to-Eat products.

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	-	-	-	3	3
CO2	1	1	-	-	-	3	-	-	-	1
CO3	-	1	-	2	1	-	-	3	-	-
CO4	1	-	2	-	-	-	1	-	-	1
CO5	-	-	-	3	-	3	2	-	-	-
CO6	2	-	-	2	-	3	2	-	1	2

CO7	**-**	**-**	**1**	**3**	**2**	**3**	**-**	**1**	**-**	**-**

Justification for the mapping

PO1-Technical Competence: Students will acquire specialized technical skills and knowledge relevant to their chosen vocation, enabling them to perform tasks effectively and efficiently in their respective industries.
CO2: The students will understand the processing of cereal based product.
CO3: The students will know about milling of cereals.

PO2-Problem Solving Skills: Students will develop the ability to identify, analyze, and solve problems encountered in their vocational field, using both theoretical knowledge and practical experience
CO1: Students will have a thorough understanding the composition of cereals.
CO2: The students will understand the processing of cereal based product.
CO3: The students will know about milling of cereals.

PO3-Employability Skills: Students will gain employability skills such as communication, teamwork, leadership, adaptability, and professionalism, which are essential for success in the workplace
CO6: Students will know learn about extrusion technology
CO7: Students will know role of different types of Ready-to-Eat products.

PO4-Industry Relevance and entrepreneurial abilities: The students will adopt knowledge and skills that are relevant to the current needs and required practices of the industry or sector, they are entering. Students focus on fostering entrepreneurial skills, equipping students with the knowledge and capabilities to start and manage their own businesses in their chosen field.
CO6: Students will know learn about extrusion technology
CO7: Students will know role of different types of Ready-to-Eat products.

PO5-Ethical and Social Responsibility: Students will be aware of the ethical considerations and social responsibilities associated with their vocational field, and they will be able to apply ethical principles in their professional practices.
CO1: Students will have a thorough understanding the composition of cereals.
CO4: Students will develop different types of breakfast cereals
CO5: The students will know about study different products of snack

PO6-Environmental Awareness: The students should be able to ability to apply the knowledge, skills, attitudes and values required to take appropriate action for justifying the effect of environmental degradation, climate change, pollution control, effective waste management etc.
CO2: The students will understand the processing of cereal based product.
CO3: The students will know about milling of cereals.

PO7-Research and Innovations: Depending on the programme, students may develop research and innovation skills, enabling them to contribute to advancements and improvements within their vocational field.
CO4: Students will develop different types of breakfast cereals
CO5: The students will know about study different products of snack

PO8 -Global Perspective: In an increasingly interconnected world, programmes may emphasize the importance of understanding global trends, markets, and perspectives relevant to the students' vocation.
CO4: Students will develop different types of breakfast cereals
CO5: The students will know about study different products of snack

PO9-Multidisciplinary studies: Students will adopt the multidisciplinary studies in an academic approach that integrate knowledge and methodology from various discipline to provide a comprehensive understanding of related job/business opportunities.
CO2: The students will understand the processing of cereal based product.
CO3: The students will know about milling of cereals.
CO4: Students will develop different types of breakfast cereals
CO5: The students will know about study different products of snack

PO10-Community Engagement: The students will be able to demonstrate the capability to participate in community-engaged services/activities for promoting the wellbeing of society
CO2: The students will understand the processing of cereal based product.
CO3: The students will know about milling of cereals.

Topics and Learning Points

Unit-1: Major cereals **8 Lectures**

Wheat --Types, milling, flour grade, flour treatments (bleaching, maturing), flour for various purposes, technology of dough development.
Rice – Physico-chemical properties, milling (mechanical & solvent extraction of rice bran), parboiling, ageing of rice, utilization of by products.
Corn – Milling (wet & dry), cornflakes

Unit-2: Minor cereals **8 Lectures**

Barley- Milling (pearl barley, barley flakes & flour), beer preparation
Oats – Milling (oatmeal, oat flour & oat flakes),
Sorghum and millets – Traditional & commercial milling (dry & wet**)**
Rye and triticale—milling (flour), uses
Anti-nutritional Factors in Cereals and their removal

Unit-3: Breakfast cereals and Snack foods **7 Lectures**

Introduction, history, presents status,
Processing of hot serve cereals and ready –to –eat breakfast cereals, Flakes, shreds, granules, puffed cereals, sugar coated products, popped and puffed snacks, Factors affecting their quality,

Unit-4: Extrusion Technology and their products **7 Lectures**

Convenience cereal foods, Durum wheat products and extrusion cooking, working of extruder

References:

1. Kent, Technology of Cereal, 5th Ed. Pergamon Press, 2003
2. Chakraborty., Post Harvest Technology of Cereals, Pulses and Oilseeds, revised ed., Oxford & IBH Publishing Co. Pvt Ltd, 1988
3. Marshall, Rice Science and Technology, Wadsworth Ed., Marcel Dekker, New York, 1994
4. Mathews, R.H. Ed. 1989. Legumes: Chemistry and Technology and Human Nutrition, Marcel Dekker, New York
5. Pomeranz, Y. Ed. 1978. Wheat: Chemistry and Technology. American Association Cereal chemist. St. Paul, Minnesota.
6. Pomeranz, Y. 1987. Modern Cereal Science and Technology, VCH, New York
7. Salunkhe, D.K., Kadam S.S. Ed. 1989. Handbook of World Food Legume: Chemistry, Processing and Utilization, CRC Press, Florida.
8. Salunkhe, D.K., Kadam S.S. and Austin, A. Ed. 1986. Quality of Wheat and Wheat Production Metropolitan Book Co. New Delhi

CBCS Syllabus as per NEP 2020 for T.Y. B.Voc. Food Processing and Post Harvest Technology (2023 Pattern)

Name of the Programme : B.Voc. Food Processing and Post Harvest Technology

Class : T.Y B.Voc.

Semester : V

Course Type : Minor

Course Code : FTR-342-MN

Course Title : Practical of Cereal Technology

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To understand the composition of cereals.
- To understand the processing of cereal based product.
- To learn about milling of cereals.
- To develop different types of breakfast cereals
- To study different products of snack
- To learn about extrusion technology.

Course Outcomes:

By the end of the course, students will be able to:

CO1: Students will have a thorough understanding the composition of cereals.
CO2: The students will understand the processing of cereal based product.
CO3: The students will know about milling of cereals.
CO4: Students will develop different types of breakfast cereals
CO5: The students will know about study different products of snack
CO6: Students will know learn about extrusion technology
CO7: Students will know role of different types of Ready-to-Eat products.

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	-	-	-	3	3
CO2	1	1	-	-	-	3	-	-	-	1
CO3	-	1	-	2	1	-	-	3	-	-
CO4	1	-	2	-	-	-	1	-	-	1
CO5	-	-	-	3	-	3	2	-	-	-
CO6	2	-	-	2	-	3	2	-	1	2
CO7	-	-	1	3	2	3	-	1	-	-

Justification for the mapping

PO1-Technical Competence: Students will acquire specialized technical skills and knowledge relevant to their chosen vocation, enabling them to perform tasks effectively and efficiently in their respective industries.
CO2: The students will understand the processing of cereal based product.
CO3: The students will know about milling of cereals.

PO2-Problem Solving Skills: Students will develop the ability to identify, analyze, and solve problems encountered in their vocational field, using both theoretical knowledge and practical experience
CO1: Students will have a thorough understanding the composition of cereals.
CO2: The students will understand the processing of cereal based product.
CO3: The students will know about milling of cereals.

PO3-Employability Skills: Students will gain employability skills such as communication, teamwork, leadership, adaptability, and professionalism, which are essential for success in the workplace
CO6: Students will know learn about extrusion technology
CO7: Students will know role of different types of Ready-to-Eat products.

PO4-Industry Relevance and entrepreneurial abilities: The students will adopt knowledge and skills that are relevant to the current needs and required practices of the industry or sector, they are entering. Students focus on fostering entrepreneurial skills, equipping students with the knowledge and capabilities to start and manage their own businesses in their chosen field.
CO6: Students will know learn about extrusion technology
CO7: Students will know role of different types of Ready-to-Eat products.

PO5-Ethical and Social Responsibility: Students will be aware of the ethical considerations and social responsibilities associated with their vocational field, and they will be able to apply ethical principles in their professional practices.
CO1: Students will have a thorough understanding the composition of cereals.
CO4: Students will develop different types of breakfast cereals
CO5: The students will know about study different products of snack

PO6-Environmental Awareness: The students should be able to ability to apply the knowledge, skills, attitudes and values required to take appropriate action for justifying the effect of environmental degradation, climate change, pollution control, effective waste management etc.
CO2: The students will understand the processing of cereal based product.
CO3: The students will know about milling of cereals.

PO7-Research and Innovations: Depending on the programme, students may develop research and innovation skills, enabling them to contribute to advancements and improvements within their vocational field.
CO4: Students will develop different types of breakfast cereals
CO5: The students will know about study different products of snack

PO8 -Global Perspective: In an increasingly interconnected world, programmes may emphasize the importance of understanding global trends, markets, and perspectives relevant to the students' vocation.
CO4: Students will develop different types of breakfast cereals
CO5: The students will know about study different products of snack

PO9-Multidisciplinary studies: Students will adopt the multidisciplinary studies in an academic approach that integrate knowledge and methodology from various discipline to provide a comprehensive understanding of related job/business opportunities.
CO2: The students will understand the processing of cereal based product.
CO3: The students will know about milling of cereals.
CO4: Students will develop different types of breakfast cereals
CO5: The students will know about study different products of snack

PO10-Community Engagement: The students will be able to demonstrate the capability to participate in community-engaged services/activities for promoting the wellbeing of society
CO2: The students will understand the processing of cereal based product.
CO3: The students will know about milling of cereals.

Topics and Learning Points

Sr. No.	Practicals Name	Periods
1.	Morphological Characteristics of cereals.	2P
2.	Physical properties of cereals.	2P
3.	To study the cooking quality of rice.	2P
4.	To study the popping of cereals	2P
5.	To study the process of flaking.	2P
6.	To study the process of puffing.	2P
7.	To study the parboiling of rice.	2P
8.	To study the malting of cereals	2P
9.	To study the preparation of cereal kheer	2P
10.	To study the cereal cake	2P
11.	To study the preparation of wheat bread	2P
12.	To study the preparation of cereal bar	2P
13.	To study the preparation of noodles.	2P
14.	To study the preparation of cereal based biscuit	2P
15.	To study the preparation of cereal snack mix	2P

References:

1. Kent, Technology of Cereal, 5th Ed. Pergamon Press, 2003
2. Chakraborty., Post Harvest Technology of Cereals, Pulses and Oilseeds, revised ed., Oxford & IBH Publishing Co. Pvt Ltd, 1988
3. Marshall, Rice Science and Technology, Wadsworth Ed., Marcel Dekker, New York, 1994

4. Mathews, R.H. Ed. 1989. Legumes: Chemistry and Technology and Human Nutrition, Marcel Dekker, New York
5. Pomeranz, Y. Ed. 1978. Wheat: Chemistry and Technology. American Association Cereal chemist. St. Paul, Minnesota.
6. Pomeranz, Y. 1987. Modern Cereal Science and Technology, VCH, New York
7. Salunkhe, D.K., Kadam S.S. Ed. 1989. Handbook of World Food Legume: Chemistry, Processing and Utilization, CRC Press, Florida.
8. Salunkhe, D.K., Kadam S.S. and Austin, A. Ed. 1986. Quality of Wheat and Wheat Production Metropolitan Book Co. New Delhi

CBCS Syllabus as per NEP 2020 for T.Y. B.Voc. Food Processing and Post Harvest Technology (2023 Pattern)

Name of the Programme : B.Voc. Food Processing and Post Harvest Technology

Class : T.Y B.Voc.

Semester : V

Course Type : Vocational Skill Course (VSC)

Course Code : FTR-321-VSC

Course Title : Practical of Entrepreneurship Development

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To understand the importance of entrepreneurship development
- To learn about the preparation of Visit report.
- To study about the develop & perform market survey format.
- To learn about to set goals to become successful entrepreneur
- To study about the Preparation of project feasibility report
- To understand the Case analysis and presentations

Course Outcomes:

On completion of the course, students will be able to:

CO1: Understand the importance of entrepreneurship development.
CO2: Learn about the preparation of Visit report.
CO3: Study about the develop& perform market survey format.
CO4: Learn about to set goals to become successful entrepreneur
CO5: Study about the Preparation of project feasibility report
CO6: Understand the Case analysis and presentations
CO7: Understand the Identification of self-employment areas.

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	4	-	2	-	2	-	-	-	1	-
CO2	3	1	-	2	-	1	-	-	2	-
CO3	2	1	-	-	3	4	3	-	1	-
CO4	-	2	-	-	1	-	2	-	-	-
CO5	-	-	-	2	3	-	-	1	2	4
CO6	1	1	-	1	-	-	3	-	4	5
CO7	1	-	-	-	3	5	6	3	-	-

Justification for the mapping

PO1-Technical Competence: Students will acquire specialized technical skills and knowledge relevant to their chosen vocation, enabling them to perform tasks effectively and efficiently in their respective industries.

CO1: Understand the importance of entrepreneurship development.

CO2: Learn about the preparation of Visit report.

CO3: Study about the develop& perform market survey format.

CO6: Understand the Case analysis and presentations

CO7: Understand the Identification of self-employment areas.

PO2-Problem Solving Skills: Students will develop the ability to identify, analyze, and solve problems encountered in their vocational field, using both theoretical knowledge and practical experience.

CO2: Learn about the preparation of Visit report.

CO3: Study about the develop& perform market survey format.

CO4: Learn about to set goals to become successful entrepreneur

CO6: Understand the Case analysis and presentations

PO3-Employability Skills: Students will gain employability skills such as communication, teamwork, leadership, adaptability, and professionalism, which are essential for success in the workplace.

CO1: Understand the importance of entrepreneurship development.

PO4-Industry Relevance and entrepreneurial abilities: The students will adopt knowledge and skills that are relevant to the current needs and required practices of the industry or sector, they are entering. Students focus on fostering entrepreneurial skills, equipping students with the knowledge and capabilities to start and manage their own businesses in their chosen field.

CO2: Learn about the preparation of Visit report.

CO5: Study about the Preparation of project feasibility report

CO6: Understand the Case analysis and presentations

PO5-Ethical and Social Responsibility: Students will be aware of the ethical considerations and social responsibilities associated with their vocational field, and they will be able to apply ethical principles in their professional practices.

CO1: Understand the importance of entrepreneurship development.
CO3: Study about the develop& perform market survey format.
CO4: Learn about to set goals to become successful entrepreneur
CO5: Study about the Preparation of project feasibility report
CO7: Understand the Identification of self-employment areas.

PO6-Environmental Awareness: The students should be able to ability to apply the knowledge, skills, attitudes and values required to take appropriate action for justifying the effect of environmental degradation, climate change, pollution control, effective waste management etc.

CO2: Learn about the preparation of Visit report.
CO3: Study about the develop& perform market survey format.
CO7: Understand the Identification of self-employment areas.

PO7-Research and Innovations: Depending on the programme, students may develop research and innovation skills, enabling them to contribute to advancements and improvements within their vocational field.

CO3: Study about the develop & perform market survey format.
CO4: Learn about to set goals to become successful entrepreneur
CO6: Understand the Case analysis and presentations
CO7: Understand the Identification of self-employment areas.

PO8 -Global Perspective: In an increasingly interconnected world, programmes may emphasize the importance of understanding global trends, markets, and perspectives relevant to the students' vocation.

CO5: Study about the Preparation of project feasibility report
CO7: Understand the Identification of self-employment areas.

PO9-Multidisciplinary studies: Students will adopt the multidisciplinary studies in an academic approach that integrate knowledge and methodology from various discipline to provide a comprehensive understanding of related job/business opportunities.

CO1: Understand the importance of entrepreneurship development.
CO2: Learn about the preparation of Visit report.
CO3: Study about the develop & perform market survey format.
CO5: Study about the Preparation of project feasibility report
CO6: Understand the Case analysis and presentations

PO10-Community Engagement: The students will be able to demonstrate the capability to participate in community-engaged services/activities for promoting the wellbeing of society

CO5: Study about the Preparation of project feasibility report
CO6: Understand the Case analysis and presentations

Topics and Learning Points

1. **Preparatory activity**
   - **a.** List various types of industries.
   - **b.** Narrate need of self-employment.
   - **c.** Anticipate importance of entrepreneurship development
2. **Creativeness and innovativeness:**

a. Teacher will assign any one Food Technology based (in a group of not more than 5-6 students) item/product, (may be Functional foods, convenient foods, Enriched and fortified foods, etc.). List at least ten uses of this item/product other than pre-defined. Think out of box.

b. List at least ten Food Technology products which have passed through innovativeness.

3. Identification of self-employment areas:

a. Teacher will assign this exercise in group of 5-6 students.

b. List at least five Food Technology based areas which have, in group's opinion, self-employment potential. Select any one promising area.

c. Develop market survey format for the selected area.

d. Perform market survey for self-employment opportunities.

e. Describe the outcome. Also narrate the experience.

f. It is compulsory to attach photographs of group conducting market survey.

4. Visit report:

a. Visit nearby :

i. District Industries Centre (DIC).
ii. Any one financial institution including bank.
iii. Training institute / GITCO/EDI/ iNDEXTb/etc.

b. Prepare the visit report which include followings:

i. Brief history of organization.
ii. Type and details of services /support/ assistance being given.
iii. Any other information which are useful to be self-employer or entrepreneur.
iv. Brochures/technical literature collected from agencies.

5. Preparing project feasibility report of assigned product:

a. Teacher will assign any one product (physical or service based having Food Technology) to the group of 5-6 students.

b. Prepare project feasibility report (Technical and financial). Specifically include capacity requirement calculations and project set up planning details. Also present the same to whole batch.

6. Case analysis and presentations:

Teacher will assign one case of successful entrepreneur and one case of failed entrepreneur to the group of 5-6 students. Student will discuss in group, will analyze and will present the same to whole batch. Student will also prepare the report on analysis. Case may be put up with printed pages but analysis has to be hand written.

References:

1. Entrepreneurship development and Management, R.K.Singal, S.K.Kataria and Sons.
2. Developing Entrepreneurship,Pareek& Co. Learning systems,Delhi
3. Entrepreneurship & Venture – Management, Clifford and Bombak, Joseph R. Momanso.
4. Planning an Industrial unit, J. N. Vyas.
5. EDI study material, EDI, BHAT, Ahmedabad, Website : http://www.ediindia.org
6. Salunkhe, D.K., Kadam S.S. and Austin, A. Ed. 1986. Quality of Wheat and Wheat Production Metropolitan Book Co. New Delhi

CBCS Syllabus as per NEP 2020 for T.Y. B.Voc. Food Processing and Post Harvest Technology

(2023 Pattern)

Name of the Programme : B.Voc. Food Processing and Post Harvest Technology

Class : T.Y B.Voc.

Semester : V

Course Type : Field Project

Course Code : FTR-335-FP

Course Title : Practical of Field Project

No. of Credits : 02

No. of Teaching Hours : 30