Anekant Education Society's

Tuljaram Chaturchand College, Baramati

(Autonomous)

Three Year B.Sc. Degree Program in Food Technology

(Faculty of Food Technology& Research)

CBCS Syllabus

F.Y B.Sc. (Food Technology) Semester –I

For Department Food Technology & Research

Tuljaram Chaturchand College, Baramati

Choice Based Credit System Syllabus (2026 Pattern)

(As Per NEP 2020)

To be implemented from Academic Year 2026-2027

Title of the Programme: F. Y. B.Sc. (Food 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 Dept. of Food Technology and Research at Tuljaram Chaturchand College of Arts, Science and Commerce (Autonomous), Baramati - Pune, has developed the curriculum for the first semester of F.Y. B.Voc. Food Technology, 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 control, 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 tools, techniques, and processes which is required to set up agencies including pickles, jam and jelly, fruit processing, vegetable processing, organic product, dairy products, Animal Product processing 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)

Programme Outcomes for Vocational (B.Voc.) Degree Programme in accordance with National Education Policy-2020 with effect from Academic Year 2023-24. Bachelor of Vocation (B.Voc.) Courses are designed to provide students with specific vocational skills and knowledge that are directly applicable to the industry or field they are studying. The programme outcomes of these courses typically focus on preparing students for employment or entrepreneurship in their chosen vocational area.

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.

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.

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

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.

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.

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.

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.

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.

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.

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

Anekant Education Society's

Tuljaram Chaturchand College, Baramati

(Autonomous)

Board of Studies (BOS) B.Voc. Food Technology & Research

Sr.No	Nameof theBOSmembers	Designation
1.	**Dr. Wajid A. Khan** Head & Associate Professor, Department of Food Technology &Research, T. C. College, Baramati.	Chairman
2.	**Ms. Pallavi A. Bhosale** Assistant Professor, Dept. of Food Tech. & Research T. C. College, Baramati	Internal Member
3.	**Ms. Shreeja R. Deokar** Assistant Professor, Dept. of Food Tech. & Research T. C. College, Baramati	Internal Member
4.	**Ms. Saudamini R. Shinde** Assistant Professor, Dept. of Food Tech. & Research T. C. College, Baramati	Internal Member
5.	**Ms. Vaishnavi A Gaikwad** Assistant Professor, Dept. of Food Tech. & Research T. C. College, Baramati	Internal Member
6.	**Ms. Prajakta A. Gawade** Assistant Professor, Dept. of Food Tech. & Research T. C. College, Baramati	Internal Member
7.	**Ms. Aarti Dongare** Assistant Professor, M.Sc. Food Science & Technology	Vice-Chancellor Nominee Subject Expert from SPPU, Pune
8.	**Mr. Gatade Abhijeet** Assistant Professor, Shivaji University, Kolhapur	Subject Expert from Outside the Parent University
9.	**Mr. Pathan Fayaz L.** Associate Professor, MIT-ADT University	Subject Expert from Outside the Parent University
10.	**Mr. Gawate Dadasaheb** Director, Di-Roma Ice-cream, Ahmad Nagar	Representative from industry/corporate sector/allied areas
10.	**Mr. Vairagal Dnyaneshwar** Schreiber Dynamix Pvt. Ltd. Baramati	Member of the College Alumni
11.	**Ms. Vhora Payal**	UG Student
12.	**Ms. Pawar Amruta**	PG Student

Information

1. **One semester** = 15 weeks (12 weeks actual teaching and 3 weeks for internal evaluation, tutorials, problem solutions, student's difficulty solution, etc.)
2. As per NCrF :
   - Theory course: A minimum of 15 hours of teaching per credit is required.
   - Laboratory course: A minimum of 30 hours in laboratory activities per credit is required.
3. **1-credit theory** = 15 hours i.e. for 1 credit, 1 hour per week teaching is to be performed.

   15 hours of 1-credit are splinted as 12 hours actual teaching + 3 hours Tutorial (practice problem solving sessions, repeated discussion on difficult topics, and discussion on student's difficulties, questions discussion and internal evaluation)

4. **1-credit practical** = 30 hours. Thus, 1 credit practical = 2 contact hours in laboratory per week

   30 hours splinted as 24 hours' actual table work and 6 hours for journal competition, oral on each practical and other internal evaluation.

5. **Each theory courses of any type** (Major, Minor, VSC, VEC, OE/GE, VEC, SEC, CC, etc.) **is of 2 credits**.
   a. **Theory per semester:** Contact hours = 24 teaching + 6 tutorials (problem solving sessions, repeated discussion on difficult topics, difficult solution, questions discussion and internal evaluation)
   b. Each course will be of two modules, One module = 15 hours
   c. Each module may consist of one or more than one chapter.
6. **Each practical course of any course is of 2 credits = 60 hours per semester**
   a. Minimum 12 laboratory sessions must be conducted in one semester.
   b. Each laboratory sessions should be 4 hours.
   c. If practical is short, then two short practicals should be included in one laboratory sessions.
   d. In 12 laboratory sessions maximum 2 demonstration sessions or table work sessions may be included and must be designed carefully for 4 hours' sessions.
   e. 4 hours' laboratory sessions include - performing table work (practical), calculation, writing results and conclusion, and submission of practical in written form to practical in charge.
   f. Pre-laboratory reading and post laboratory work / questions should be assigned on each practical and this will be the part of internal evaluation.
7. **Design syllabus of each theory and practical course as per above guidelines.**
   a. **Theory syllabus** should be given module wise and chapter wise.
   b. **Theory syllabus** should include name of topic, number of teaching hours allotted, detailed point wise syllabus, page numbers, references book no.
   c. It is recommended that**, design syllabus of one theory course from maximum two references books** and they will be called as main reference books/text books. Below that, you can add names of more reference books and they will be supplementary reference books.
   d. **Syllabus of practical** must be given practical wise. Name of experiment and aim of the experiment should be clearly mentioned. Mention reference book number or bibliography for each practical. At least 16 practicals' must be included in syllabus from which 12 practicals will be actually conducted. If practical is short, then two short practicals' will be considered as one practical.
   e. At the end of syllabus of theory and practical course, a list of references book should be given number wise.

f. At the end of each theory and practical course 6 CO should be given.

A. Names of UG and PG courses related to Specialization

Important Note: For specialized subjects wherever designing of practical course is not adequate then included, theory course of 2 credits in place of practical course.

Semester	Major Courses	Major Elective Courses	Minor Courses		VSC	IKS
I	2 theory + 1 Practical				1 Theory	1 Theory
II	2 theory + 1 Practical		1 Theory + 1 Practical		1 Practical	0
III	3 theory + 1 Practical		1 Theory + 1 Practical		1 Theory	0
IV	3 theory + 1 Practical		1 Theory + 1 Practical		1 Practical	0
V	3 theory + 2 Practical	1 Theory + 1 Practical	1 Theory + 1 Practical		1 Theory	0
VI	3 theory + 2 Practical	1 Theory + 1 Practical			1 Practical	0
		VII and VIII Sem honours degree with major				
VII	5 theory + 2 Practical	1 Theory + 1 Practical	0		0	0
VIII	5 theory + 2 Practical	1 Theory + 1 Practical	0		0	0
		VII and VIII Sem honours degree with research				
VII	4 theory + 1 Practical	1 Theory + 1 Practical	0		0	0
VIII	4 theory + 1 Practical	1 Theory + 1 Practical	0		0	0

* In elective course 2T+2P are related to each other. In this case students have to choose more than 1 option i.e. in elective part, at least 2 courses each consisting of 1 theory 1 practical courses in combination.

Department of Food Technology & Research **F.Y B.Sc. Semester-I**

Anekant Education Society's

Course & Credit Structure for (B.Sc. Food Technology & Research) Semester I and II

Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati (Autonomous)

Sem	Course Type	Course Code	Course Name	Theory/ Practical	Credits
I	DSC-I (General)	FTR-101-GEN	Introduction to Food Technology	Theory	2
		FTR-102- GEN	Practicals of Food Technology	Practical	2
	DSC-II (General)	FTR-103- GEN	Introduction to Dairy Technology	Theory	2
		FTR-104- GEN	Practicals of Dairy Technology	Practical	2
	DSC-III (General)	FTR-105-GEN	Food Science-I	Theory	2
		FTR-106-GEN	Practicals of Food Science-I	Practical	2
	Open elective (OE)	FTR-107-OE	Basics of Food Technology	Theory	2
	Skill Enhancement Course(SEC)	FTR-108-SEC	Culinary Arts	Practical	2
	Indian Knowledge System (IKS)	FTR-109-IKS	Generic	Theory	2
	Ability enhancement Course (AEC)	FTR-110-AEC	Functional English-I	Theory	2
	Value Education Course (VEC)	FTR-111-VEC	Environmental Science	Theory	2
	Co-curricular Course (CC)	----------	To be selected from the basket	-----	--
	Total Credits Semester-III				**22**
II	DSC-I (General)	FTR-151- GEN	Food Preservation Technology	Theory	2
		FTR-152- GEN	Practicals of Food Preservation Technology	Practical	2
	DSC-II (General)	FTR-153- GEN	Food Adulteration	Theory	2
		FTR-154- GEN	Practicals of Food Adulteration	Practical	2
	DSC-III (General)	FTR-155-GEN	Food Science-II	Theory	2
		FTR-156-GEN	Practicals of Food Science-II	Practical	2
	Open Elective (OE)	FT-157-OE	Practicals of Basics of Food Technology	Practical	2
	Skill enhancement Course (SEC)	FT-158-SEC	Traditional Indian foods	Practical	2
	Ability Enhancement Course (AEC)	FT-159-AEC	Functional English-II	Theory	2
	Value education course (VEC)	FT-160-VEC	Digital and Technological Solution	Theory	2
	Co-curriculum (CC)	YOG/PES/CUL/NSS/NCC-161-CC	NCC/NSS/Sports/Yoga etc	--------	2
	Total Credits				**22**
	Total Credits Sem I &II				**44**

CBCS Syllabus as per NEP 2020 for F.Y B.Sc. Food Technology & Research (2026 Pattern)

Name of the Programme: B.Sc. Food Technology

Programme Code **:** FTR

Class **:** F.Y B.Sc.

Semester **I**

Course Type **:** DSC-I (General)

Course Code **:** FTR-101-GEN

Course Title **:** Introduction to Food Technology

No. of Credits : 02

No. of Teaching Hours 30

Learning Objectives:

- To impart knowledge of different methods of fruits and vegetable processing.
- To learn about nutritional importance of fruits, vegetable and plantation crops
- To learn about processing of various spices, tea, coffee and cocoa.
- To develop the skills of various postharvest technologies and processing of food after postharvest
- To study preservation of fruits, vegetables and plantation crops
- To study various processed product, their preparation and storage methods.

Course Outcomes:

CO1: Students will have a thorough understanding of various food processing techniques.
CO2: The students will know the importance of various preservation techniques.
CO3: The students will know about nutritional importance of fruits, vegetable and plantation crops
CO4: The students will know Quality Control and Waste Utilization in fruits & vegetables
CO5: The students will know various postharvest technologies and processing of food after postharvest
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage method

Topics and Learning Points

Unit 1 Basics of Food Technology **09 Lectures**

Definition and scope of Food Technology, History and development of food processing
Importance of Food Technology, Role of food technologists in industry

Unit 2. Food Science Fundamentals **08 Lectures**
Composition of food: carbohydrates, proteins, fats, vitamins, minerals, water
Physical and chemical properties of food, Food spoilage and preservation principles
Unit 3. Food Processing & Preservation **07 Lectures**
Thermal processing (pasteurization, sterilization), Drying, freezing, canning, Fermentation
Use of preservatives
Unit 4. Nutrition & Health **06 Lectures**
Nutritional value of foods, Balanced diet, Functional foods

References:

1. Subbulakshi G ,Udapi shobha A, (2001) ,food processing and preservation , New age international (P) limited , publisher
2. Srivastava R.P, Kumar Sanjeev (1994) ,Fruits and vegetable preservation , first edition, International book distributing co.
3. S. Rangnna (1977), Handbook of Analysis and quality control for fruit and vegetable products (second edition) ,Tata Mcgraw –hill publishing co. limited
4. Loesecke H.W.V. (2005), Drying and dehydration of foods, Updesh purohit for agrobios (India) jodhpur.
5. S. Saraswathy , T.L.preethi , S.Balsubramanyan , J.suresh ,N. Revanthy and S. naarajan (2008) : Post harvest Management of Horticulture Crops , Dr, Updesh
6. Purohit for Agrobios (India) Jodhpur Salunkhe D. K. Kadam, S. S (2005), Handbook of fruit science and technology ,Marcel dekker, Inc.
7. Bose T. k. Mitra, S.K, Sanyal D (2001), Fruits : Tropical and subtropical (vol .1), Third edition, Partha sankar basu naya udyog. Bhatiya Vijaya (2004), Preservation of fruit and vegetables, 2nd edition, Kalyani publishers

Mapping of Program Outcomes with Course Outcome

Class: F.Y. B.Sc. **Subject:** Introduction to Food Technology
Course Type: DSC-I (General) **Code**: FTR-101-GEN
Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	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	-
CO7	1	2	2	-	-	-	3	-	2	-

Justification of POs

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 processing techniques.
CO2: The students will know the importance of various preservation techniques.
CO5: The students will know various postharvest technologies and processing of food after

postharvest
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

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: The students will know the importance of various preservation techniques.
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

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: The students will know the importance of various preservation techniques.
CO5: The students will know various postharvest technologies and processing of food after postharvest
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

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 processing techniques.
CO5: The students will know various postharvest technologies and processing of food after postharvest
CO6: The students will know preservation of fruits, vegetables and 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 processing techniques.
CO4: The students will know Quality Control and Waste Utilization in fruits & vegetables

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 processing techniques.
CO4: The students will know Quality Control and Waste Utilization in fruits & vegetables

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 have a thorough understanding of various food processing techniques.
CO2: The students will know the importance of various preservation techniques.
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

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 processing techniques.
CO3: The students will know about nutritional importance of fruits, vegetable and 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.
CO1: Students will have a thorough understanding of various food processing techniques.
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

CBCS Syllabus as per NEP 2020 for F.Y B.Sc. Food Technology & Research (2026 Pattern)

Name of the Programme: B.Sc. Food Technology

Programme Code **:** FTR

Class **:** F.Y B.Sc.

Semester I

Course Type **:** DSC-I (General)

Course Code **:** FTR-102-GEN

Course Title **:** Practicals of Food Technology

No. of Credits : 02

No. of Teaching Hours 30

Topics and Learning Points

Sr. No.	Practicals Name	Periods
1.	To study the utensils used in food preservation.	2P
2.	To study the nutritive functions of food products.	2P
3.	To study the weight and measures.	2 P
4.	To study the mode of heat transfer	2 P
5.	To study the different cooking methods.	2P
6.	Study of blanching of different fruits & vegetables .	2P
7.	Study of freezing of different fruits & vegetables	2P
8.	Study the refrigeration system	2 P
9.	To study the irradiation method	2P
10.	To study the drying of food sample	2P
11.	To study the osmotic dehydration	2P
12.	Study the canning of fruit and vegetables	2P
13.	To study the pasteurization of milk	2P
14.	To study the sterilization of milk	2P
15.	Visit to food processing industry	2P

References: -

- Food Facts & Principles – N. Shakuntala Manay, M. Shadaksharswamy
- Food Science – Sumati R. Mudambi, Shalini M. Rao, M.V.Rajagopal
- Essentials of Food Science – Vickie A. Vaclavik, Elizabeth W. Chrishtian
- Food Science (Vth edition) – Norman N. Potter and Joseph H. Hotchkiss (CSB Publishers and Distributors, New Delhi, 1996)
- Food Preservation, Desorier

Mapping of Program Outcomes with Course Outcome

Class: F.Y. B.Sc. **Subject:** Practicals of Food Technology
Course Type: DSC-I (General) **Code**: FTR-102-GEN
Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	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	-
CO7	1	2	2	-	-	-	3	-	2	-

Justification of POs

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 processing techniques.
CO2: The students will know the importance of various preservation techniques.
CO5: The students will know various postharvest technologies and processing of food after postharvest
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

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: The students will know the importance of various preservation techniques.
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

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: The students will know the importance of various preservation techniques.
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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 processing techniques.
CO5: The students will know various postharvest technologies and processing of food after postharvest
CO6: The students will know preservation of fruits, vegetables and 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 processing techniques.
CO4: The students will know Quality Control and Waste Utilization in fruits & vegetables

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 processing techniques.
CO4: The students will know Quality Control and Waste Utilization in fruits & vegetables

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 have a thorough understanding of various food processing techniques.
CO2: The students will know the importance of various preservation techniques.
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

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 processing techniques.
CO3: The students will knowabout nutritional importance of fruits, vegetable and 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.
CO1: Students will have a thorough understanding of various food processing techniques.
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

CBCS Syllabus as per NEP 2020 for F.Y B.Sc. Food Technology & Research (2026 Pattern)

Name of the Programme: B.Sc. Food Technology

Programme Code **:** FTR

Class **:** F.Y B.Sc.

Semester **I**

Course Type **:** DSC-II (General)

Course Code **:** FTR-103- GEN

Course Title **:** Introduction to Dairy Technology

No. of Credits : 02

No. of Teaching Hours 30

Topics and Learning Points

Unit I: Introduction **05 Lectures**

Milk - Definition, sources, and composition of milk, factors effecting composition of milk, physiochemical properties of milk, grading of milk-definition and types of grades, collection and transportation of milk.

Unit II: Processing of market milk **12 Lectures**

Flowchart of milk processing, Reception, Different types of cooling systems. Clarification and filtration process, standardization- Pearson's square method, pasteurization-LTLT, HTST and UHT process- continuous pasteurizer, Sterilization and Homogenization, Cream separation- centrifugal cream separator, bactofugation.

Special milks

Skim milk, evaporated milk, condensed milk, standardized milk, toned milk, double toned milk, flavoured milk, reconstituted milk.

Unit III: Indigenous and Fermented milk products **06 Lectures**

Product description, methods for manufacture of butter, cheese, ice cream, khoa, channa, paneer, shrikhand, ghee. Spray drying system: dried milk- whole milk and skim milk powder. Milk and milk products in India.

Unit IV: In-Plant cleaning system **07 Lectures**

Introduction to Cleaning in- place (CIP) system - cleaning procedure, Cleaning efficiency, Methods of cleaning in food industry, cleaning solutions – Detergents, Sanitizers. SIP system of dairy plant, Personal hygiene in dairy plan

Mapping of Program Outcomes with Course Outcome

Class: F.Y. B.Sc. **Subject:** Introduction to Dairy Technology

Course Type: DSC-II (General) **Code**: FTR-103- GEN

Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	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**	**-**
CO7	**1**	**2**	**2**	**-**	**-**	**-**	**3**	**-**	**2**	**-**

Justification of POs

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 processing techniques.
CO2: The students will know the importance of various preservation techniques.
CO5: The students will know various postharvest technologies and processing of food after postharvest
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

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: The students will know the importance of various preservation techniques.
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

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: The students will know the importance of various preservation techniques.
CO5: The students will know various postharvest technologies and processing of food after postharvest
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

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 processing techniques.
CO5: The students will know various postharvest technologies and processing of food after postharvest
CO6: The students will know preservation of fruits, vegetables and 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 processing techniques.
CO4: The students will know Quality Control and Waste Utilization in fruits & vegetables

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 processing techniques.
CO4: The students will know Quality Control and Waste Utilization in fruits & vegetables

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 have a thorough understanding of various food processing techniques.
CO2: The students will know the importance of various preservation techniques.
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

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 processing techniques.
CO3: The students will knowabout nutritional importance of fruits, vegetable and 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.
CO1: Students will have a thorough understanding of various food processing techniques.
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

CBCS Syllabus as per NEP 2020 for F.Y B.Sc. Food Technology & Research (2026 Pattern)

Name of the Programme: B.Sc. Food Technology

Programme Code **:** FTR

Class **:** F.Y B.Sc..

Semester **I**

Course Type **:** DSC-II (General)

Course Code **:** FTR-104- GEN

Course Title **:** Practicals of Dairy Technology

No. of Credits : 02

No. of Teaching Hours 30

Topics and Learning Points

Sr. No.	Title of the Practicals	Credits
1	Physical examination of milk	1
2	Platform tests of milk	1
3	Determination of Adulteration in milk	1
4	Determination of Titratable Acidity of Milk.	1
5	Determination of fat content in milk.	1
6	Determination of SNF content in milk.	1
7	Preparation of coagulated milk product (paneer and channa)	1
8	Preparation of channa based sweet (*Rasogulla)*	1
9	Preparation of dahi amd Lassi.	1
10	Preparation of khoa and Basundi.	1
11	Preparation of chakka	1
12	Preparation of shrikand and amrakhand.	1
13	Preparation of kalakand.	1
14	Preparation of cooking butter and ghee.	1
15	Preparation of flavoured milk.	1

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

Mapping of Program Outcomes with Course Outcome

Class: F.Y. B.Sc. **Subject:** Practicals of Dairy Technology

Course Type: DSC-I (General) **Code**: FTR-104- GEN

Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	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	-
CO7	1	2	2	-	-	-	3	-	2	-

Justification of POs

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 processing techniques.
CO2: The students will know the importance of various preservation techniques.
CO5: The students will know various postharvest technologies and processing of food after postharvest
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

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: The students will know the importance of various preservation techniques.
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

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: The students will know the importance of various preservation techniques.
CO5: The students will know various postharvest technologies and processing of food after postharvest
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

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 processing techniques.
CO5: The students will know various postharvest technologies and processing of food after postharvest
CO6: The students will know preservation of fruits, vegetables and 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 processing techniques.
CO4: The students will know Quality Control and Waste Utilization in fruits & vegetables

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 processing techniques.
CO4: The students will know Quality Control and Waste Utilization in fruits & vegetables

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 have a thorough understanding of various food processing techniques.
CO2: The students will know the importance of various preservation techniques.
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

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 processing techniques.
CO3: The students will knowabout nutritional importance of fruits, vegetable and 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.
CO1: Students will have a thorough understanding of various food processing techniques.
CO6: The students will know preservation of fruits, vegetables and plantation crops
CO7: The students will know various processed product, their preparation and storage methods

CBCSSyllabusasperNEP2020for F.Y B.Voc. Food Technology & Research (2023 Pattern)

Name of the Programme: B.Voc. Food Technology & Research

Programme Code **:** FTR

Class **:** F.Y B.Voc.

Semester **I**

Course Type **:** DSC-III (General)

Course Code **:** FTR-105-GEN

Course Title **:** Food Science-I

No. of Credits ***: 02***

No. of Teaching Hours 30

LearningObjectives:

1. To make students aware about scope and opportunities in food processing sector.
2. To make students aware of different functions of food.

3. To make students aware about role of various food groups human diet.
4. To make students understand the nutritive value of foods.
5. To make student understand basic principles of cooking and its effect on different foods.
6. To study about the composition of different food groups.
7. To study about Toxins present in foods and its elimination.

CourseOutcomes:

CO 1: To make students aware about scope and opportunities in food processing sector.
CO 2: To make students aware of different functions of food.
CO 3: To make students aware about role of various food groups human in diet.
CO 4: To make students understand the nutritive value of foods.
CO 5: To make student understand basic principles of cooking and its effect on different foods.
CO 6: To study about the composition of different food groups.
CO 7: To study about Toxins present in foods and its elimination.

TopicsandLearningPoints

Unit-1: Introduction to Food science **05 Lectures**
Scope and Opportunities in Food Industries, Definition, Functions of food, Food groups, mode of heat transfer, Cooking- objectives, Preparation & cooking methods

Unit-2: Cereals & Pulses **12 Lectures**
Cereals: Structure, Composition& nutritive value of Wheat, Rice & Maize, Cereal Cookery, Role of cereals in cookery**,** other important Cereals, Textured Vegetable Protein (TVP) Sources and Advantage
Pulses -Composition & Nutritive value, toxic constituents & its elimination, Germination and its Changes, Pulse cookery, Role of pulses in cookery

Unit-3: Fruits & Vegetables **08 Lectures**
Fruits- Classification**,** Sources, Composition and Nutritive value, ripening of fruits, Browning of fruits
Vegetables- Classification, Composition and Nutritive value, Vegetable cookery, Role of vegetable in cookery

Unit -4: Nuts, Oilseeds, Spices & Aromatics **05 Lectures**
Composition & Nutritive value, important nuts & oilseeds, toxins, Role of nuts & oilseeds in cookery, Classification, General functions of spices, Herbs, role of spices in cookery.

References:

- Food Facts & Principles – N. ShakuntalaManay, M. Shadaksharswamy
- Food Science – Sumati R. Mudambi, Shalini M. Rao, M.V.Rajagopal
- Essentials of Food Science – Vickie A. Vaclavik, Elizabeth W. Chrishtian
- Food Science (Vth edition) – Norman N. Potter and Joseph H. Hotchkiss (CSB Publishers and Distributors, New Delhi, 1996)

Mapping of Program Outcomes with Course Outcome

Class: F.Y. B.Sc. **Subject:** Food Science-I
Course Type: DSC-III (General) **Code**: FTR-105-GEN
Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation,

3= Strong or direct relation

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO 6	PO7	PO8	PO9	PO10	PO11	PO1 2
CO1	3	-	-	-	2	-	-	-	-	2	-	-
CO2	2	-	-	2	2	-	2	-	-	2	-	5
CO3	2	-	-	6	-	6	2	2	-	4	-	-
CO4	1	3	3	2	-	5	-	-	-	2	-	-
CO5	-	-	-	6	6	5	4	2	-	2	-	2
CO6	1	-	2	4	3	6	5	-	-	2	3	-
CO7	-	-	3	6	-	7	5	-	2	4	-	-

Justification for the mapping

PSO1: Disciplinary knowledge-Understand the basic concepts, fundamental principles and experimental findings and the scientific theories related to food technology, food science and Food technology & engineering and its other fields related to the program.
CO 1: To make students aware about scope and opportunities in food processing sector.
CO 2: To make students aware of different functions of food.
CO 3: To make students aware about role of various food groups in human diet.
CO 4: To make students understand the nutritive value of foods.
CO 6: To study about the composition of different food groups.

PSO2: Communication Skills - Develop various communication skills such as reading, listening and speaking skills to express ideas and views clearly and effectively.
CO 4: To make students understand the nutritive value of foods.

PSO3: Critical Thinking- Propose novel idea sin explaining the scientific data, facts and figures related to science and technology**.**
CO 4: To make students understand the nutritive value of foods.
CO 6: To study about the composition of different food groups.
CO 7: To study about Toxins present in foods and its elimination.

PSO4: Analytical reasoning and problem solvingTo unable the students with good scientific and engineering knowledge so as to comprehend, design and create food products and devices for food industry and provide solutions for the challenges in the food industry as well as in the agriculture.
CO 2: To make students aware of different functions of food.
CO 3: To make students aware about role of various food groups'in human diet.
CO 4: To make students understand the nutritive value of foods.
CO 5: To make student understand basic principles of cooking and its effect on different foods.
CO 6: To study about the composition of different food groups.
CO 7: To study about Toxins present in foods and its elimination.

PSO5: Sense of Inquiry Curiously ask relevant questions for better understanding of fundamental concepts and principles,scientific theories and applications related tothestudy.
CO 1: To make students aware about scope and opportunities in food processing sector.
CO 2: To make students aware of different functions of food.

CO 5: To make student understand basic principles of cooking and its effect on different foods.
CO 6: To study about the composition of different food groups.

PSO6: Use of modern tools operate modern tools, equipment, instrument and laboratory techniques to perform the experiments and write the programmes in the different languages.
CO 3: To make students aware about role of various food groups human diet.
CO 4: To make students understand the nutritive value of foods.
CO 5: To make student understand basic principles of cooking and its effect on different foods.
CO 6: To study about the composition of different food groups.
CO 7: To study about Toxins present in foods and its elimination.

PSO7: Research skills Understand how to design, collect, analyze, interpret and evaluate information/data that is relevant to food technology.
CO 2: To make students aware of different functions of food.
CO 3: To make students aware about role of various food groups human diet.
CO 5: To make student understand basic principles of cooking and its effect on different foods.
CO 6: To study about the composition of different food groups.
CO 7: To study about Toxins present in foods and its elimination.

PSO8: Application of knowledge develop a scientific outlook and apply the knowledge with respect to food technology.
CO 3: To make students aware about role of various food groups human diet.
CO 5: To make student understand basic principles of cooking and its effect on different foods.

PSO9: Ethical awareness To train students in professional and ethical attitude, effective communication skills, team work skills, and multidisciplinary approaches related to food technology and engineering.
CO 7: To study about Toxins present in foods and its elimination.

PSO10: Team Work understand the basic concepts, fundamental principles and experimental findings and the scientific theories related to food technology, food science and food technology and engineering and its other fields related to the programme.
CO 1: To make students aware about scope and opportunities in food processing sector.
CO 2: To make students aware of different functions of food.
CO 3: To make students aware about role of various food groups human diet.
CO 4: To make students understand the nutritive value of foods.
CO 5: To make student understand basic principles of cooking and its effect on different foods.
CO 6: To study about the composition of different food groups.
CO 7: To study about Toxins present in foods and its elimination.

PSO 11: Environmental sustainability Develop various communication skills such and reading, listening and speaking skills to express ideas and views clearly and effectively.
CO 6: To study about the composition of different food groups.

PSO 12 Lifelong learning Propose novel ideas in explain the scientific data, fact and figures related to science and technology.
CO 2: To make students aware of different functions of food.
CO 5: To make student understand basic principles of cooking and its effect on different foods.

CBCS Syllabus as per NEP 2020 for F. Y. B.Voc. Food Technology & Research

Name of the Programme: B.Voc. Food Technology & Research

Programme Code **:** FTR

Class **:** F.Y B.Voc.

Semester **: I**

Course Type **:** DSC-III (General)

Course Code **:** FTR-106-GEN

Course Title **:** Practicals of Food Science-I

No. of Credits **: 02**

No. Of Teaching Hours **:** 30

Learning Objectives:

1. To make students aware about scope and opportunities in food processing sector.
2. To make students aware of different functions of food.
3. To make students aware about role of various food groups human diet.
4. To make students understand the nutritive value of foods.
5. To make student understand basic principles of cooking and its effect on different foods.
6. To study about the composition of different food groups.
7. To study about Toxins present in foods and its elimination.

Course Outcomes:

CO 1: To make students aware about scope and opportunities in food processing sector.
CO 2: To make students aware of different functions of food.
CO 3: To make students aware about role of various food groups in human diet.
CO 4: To make students understand the nutritive value of foods.
CO 5: To make student understand basic principles of cooking and its effect on different foods.
CO 6: To study about the composition of different food groups.
CO 7: To study about Toxins present in foods and its elimination.

TopicsandLearningPoints

Sr. No.	Title of the practicals	Credits
1.	Study of different cooking methods	2P
2.	Preparation of rice flakes	2P
3.	Preparation of soya nuts	2P
4.	Extraction of edible oil	1P
5.	Preparation of Coated Masala Groundnuts	1P

6.	Study of Germination/Malting	1P
7.	Preparation of Garlic/Ginger Paste	1P
8.	Preparation of condensed milk	2P
9.	Preparation of chips & wafers	2P
10.	Preparation of instant soup premix	1P
11.	Preparation of curry powder	1P
12.	Preparation of turmeric powder	1P
13.	Preparation of powdered drinks	1P
14.	Visit to industry	1P
15.	Preparation of report on industrial visit & presentation	2P

References:

1. Food Science By Potter
2. Food Science 3rd edition By B. Shrilakshmi
3. Fruit & Vegetable Preservation By Srivastava Kumar
4. Food, Facts and Principles By ShakuntalaManay
5. Food Processing and Preservation By G. Subbulakshmi, Shobha A. Udipi
6. Food Processing Technology 2nd edition By P. J. Fellows

Mapping of Program Outcomes with Course Outcome

Class: F.Y. B.Sc. **Subject:** Practicals of Food Science-I

Course Type: DSC-III (General) **Code**: FTR-106-GEN

Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	2	-	-	-	-	-	-	-
CO2	2	-	-	2	2	-	2	-	-	2	-	5
CO3	2	-	-	6	-	6	2	2	-	4	-	-
CO4	1	3	3	2	-	5	-	-	-	2	-	-
CO5	-	-	-	6	6	5	4	2	-	-	-	2
CO6	1	-	2	4	3	6	5	-	-	2	3	-
CO7	-	-	3	6	-	7	5	-	2	4	-	-

Justification for the mapping

PSO1: Disciplinary knowledge-Understand the basic concepts, fundamental principles and experimental findings and the scientific theories related to food technology, food science and Food technology & engineering and its other fields related to the program.

CO 1: To make students aware about scope and opportunities in food processing sector.

CO 2: To make students aware of different functions of food.

CO 3: To make students aware about role of various food groups human diet.

CO 4: To make students understand the nutritive value of foods.

CO 6: To study about the composition of different food groups.

PSO2: Communication Skills - Develop various communication skills such as reading, listening and speaking skills to express ideas and views clearly and effectively.
CO 4: To make students understand the nutritive value of foods.

PSO3: Critical Thinking- Propose novel idea sin explaining the scientific data, facts and figures related to science and technology**.**
CO 4: To make students understand the nutritive value of foods.
CO 6: To study about the composition of different food groups.
CO 7: To study about Toxins present in foods and its elimination.

PSO4: Analytical reasoning and problem solving to unable the students with good scientific and engineering knowledge so as to comprehend, design and create food products and devices for food industry and provide solutions for the challenges in the food industry as well as in the agriculture.
CO 2: To make students aware of different functions of food.
CO 3: To make students aware about role of various food groups human diet.
CO 4: To make students understand the nutritive value of foods.
CO 5: To make student understand basic principles of cooking and its effect on different foods.
CO 6: To study about the composition of different food groups.
CO 7: To study about Toxins present in foods and its elimination.

PSO5: Sense of Inquiry Curiously ask relevant questions for better understanding of fundamental concepts and principles, scientific theories and applications related to the study.
CO 1: To make students aware about scope and opportunities in food processing sector.
CO 2: To make students aware of different functions of food.
CO 5: To make student understand basic principles of cooking and its effect on different foods.
CO 6: To study about the composition of different food groups.

PSO6: Use of modern tools, equipment, instrument and laboratory techniques to perform the experiments and write the programmes in the different languages.
CO 3: To make students aware about role of various food groups human diet.
CO 4: To make students understand the nutritive value of foods.
CO 5: To make student understand basic principles of cooking and its effect on different foods.
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PSO7: Research skills Understand how to design, collect, analyze, interpret and evaluate information/data that is relevant to food technology.
CO 2: To make students aware of different functions of food.
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CO 5: To make student understand basic principles of cooking and its effect on different foods.
CO 6: To study about the composition of different food groups.
CO 7: To study about Toxins present in foods and its elimination.

PSO8: Application of knowledge develops a scientific outlook and applies the knowledge with respect to food technology.
CO 3: To make students aware about role of various food groups in human diet.
CO 5: To make student understand basic principles of cooking and its effect on different foods.

PSO9: Ethical awareness to train students in professional and ethical attitude, effective communication skills, team work skills, and multidisciplinary approaches related to food technology and engineering.
CO 7: To study about Toxins present in foods and its elimination.

PSO10: Team Work understand the basic concepts, fundamental principles and experimental findings and the scientific theories related to food technology, food science and food technology and engineering and its other fields related to the programme.
CO 2: To make students aware of different functions of food.
CO 3: To make students aware about role of various food groups in human diet.
CO 4: To make students understand the nutritive value of foods.
CO 6: To study about the composition of different food groups.
CO 7: To study about Toxins present in foods and its elimination.

PSO11: Environmental sustainability Develop various communication skills such and reading, listening and speaking skills to express ideas and views clearly and effectively.
CO 6: To study about the composition of different food groups.

PSO12: Lifelong learning Propose novel ideas in explain the scientific data, fact and figures related to science and technology.
CO 2: To make students aware of different functions of food.
CO 5: To make student understand basic principles of cooking and its effect on different foods.

CBCS Syllabus as per NEP 2020 for F.Y B.Voc. Food Technology & Research (2025 Pattern)

Name of the Programme: B.Voc. Food Technology & Research

Programme Code **:** FTR

Class **:** F.Y B.Voc.

Semester **: I**

Course Type **:** Skill Enhancement Course (SEC)

Course Code **:** FTR-108-SEC

Course Title **:** Culinary Arts

No. of Credits ***: 02***

No. of Teaching Hours 30

Learning Objectives:

1 To make students aware about importance of presentation skills in food processing sector.
2 To make students aware about various equipments in artistic presentation of foods and their handling.

3 To make students aware about various utensils in artistic presentation of foods and their handling.
4 To make various products with different colours and shape to increase its attractiveness.
5 To make students prepare various desserts with attractive shape and colour.
6 To make students prepare various healthy and colourful soups.
7 To enhance students fruits and vegetable carving skills.

CourseOutcomes:

CO1: To make students aware about importance of presentation skills in food processing sector.
CO2: To make students aware about various equipments in artistic presentation of foods and their handling.

CO3: To make students aware about various utensils in artistic presentation of foods and their handling.
CO4: To make various products with different colours and shape to increase its attractiveness.
CO5: To make students prepare various desserts with attractive shape and colour.
CO6: To make students prepare various healthy and colourful soups
CO7: To enhance students fruits and vegetable carving skills.

Topics and Learning Points

Sr. No.	Title of practical	Credits
1.	Introduction to equipments required in culinary arts.	2P
2.	Introduction to utensils required in culinary arts.	2P
3.	Preparation of sikh/vegetable kabab.	2P
4.	Preparation of Smoked products (Dum Biryani)	2P
5.	Preparation of Chirote	2P
6.	Preparation of coated products.	2P
7.	Preparation of cheese cake.	2P
8.	Preparation of steamed products (steam modak/momos)	2P
9.	Preparation of Mocktails	2P
10.	Preparation of various salads	2P
11.	Preparation of soups.	2P
12.	Preparation of various types of desserts-Kunafa	2P
13.	To study and prepare various carving models from fruits and vegetables.	2P
14.	To study plate presentation techniques of food products.	2P
15.	Visit to Food service establishment and visit report writing.	2P

References:

- **The Food Lab: Better Home Cooking Through Science" by J. Kenji López-Alt**
- On Food and Cooking: The Science and Lore of the Kitchen (Hardcover) by Harold McGee
- The Professional Chef by Culinary Institute of America.

Mapping of Program Outcomes with Course Outcome

Class: F.Y. B.Sc. **Subject:** Culinary Arts

Course Type: Skill Enhancement Course (SEC) **Code**: FTR-108-SEC

Weightage: 0= No Relation, 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	2	-	-	-	-	-	-	-
CO2	2	-	-	2	2	-	2	-	-	2	-	5
CO3	2	-	-	6	-	6	2	2	-	4	-	-
CO4	1	3	3	2	-	5	-	-	-	2	-	-
CO5	-	-	-	6	6	5	4	2	-	-	-	2
CO6	1	-	2	4	3	6	5	-	-	2	3	-
CO7	-	-	3	6	-	7	5	-	2	4	-	-

Justification for the mapping

PSO1: Disciplinary knowledge-Understand the basic concepts, fundamental principles and experimental findings and the scientific theories related to food technology, food science and Food technology & engineering and its other fields related to the program.
CO1: To make students aware about importance of presentation skills in food processing sector.
CO2: To make students aware about various equipments in artistic presentation of foods and their handling.
CO3: To make students aware about various utensils in artistic presentation of foods and their handling.
CO4: To make various products with different colors and shape to increase its attractiveness.

PSO2: Communication Skills - Develop various communication skills such as reading, listening and speaking skills to express ideas and views clearly and effectively.
CO4: To make various products with different colors and shape to increase its attractiveness.

PSO3: Critical Thinking- Propose novel idea sin explaining the scientific data, facts and figures related to science and technology**.**
CO4: To make various products with different colors and shape to increase its attractiveness.
CO6: To make students prepare various healthy and colorful soups
CO7: To enhance student's fruits and vegetable carving skills.

PSO4: Analytical reasoning and problem solving to enable the students with good scientific and engineering knowledge so as to comprehend, design and create food products and devices for food industry and provide solutions for the challenges in the food industry as well as in the agriculture.
CO2: To make students aware about various equipments in artistic presentation of foods and their handling.
CO3: To make students aware about various utensils in artistic presentation of foods and their handling.
CO4: To make various products with different colours and shape to increase its attractiveness.
CO5: To make students prepare various desserts with attractive shape and colour.
CO6: To make students prepare various healthy and colourful soups

CO7: To enhance student's fruits and vegetable carving skills.

PSO5: Sense of Inquiry Curiously ask relevant questions for better understanding of fundamental concepts and principles, scientific theories and applications related to the study.
CO1: To make students aware about importance of presentation skills in food processing sector.
CO2: To make students aware about various equipments in artistic presentation of foods and their handling.
CO5: To make students prepare various desserts with attractive shape and colour.
CO6: To make students prepare various healthy and colorful soups

PSO6: Use of modern tools operate modern tools, equipment, instrument and laboratory techniques to perform the experiments and write the programmes in the different languages.
CO3: To make students aware about various utensils in artistic presentation of foods and their handling.
CO4: To make various products with different colours and shape to increase its attractiveness.
CO5: To make students prepare various desserts with attractive shape and colour.
CO6: To make students prepare various healthy and colourful soups
CO7: To enhance students fruits and vegetable carving skills.

PSO7: Research skills Understand how to design, collect, analyze, interpret and evaluate information/data that is relevant to food technology.
CO2: To make students aware about various equipments in artistic presentation of foods and their handling.
CO3: To make students aware about various utensils in artistic presentation of foods and their handling.
CO5: To make students prepare various desserts with attractive shape and colour.
CO6: To make students prepare various healthy and colourful soups
CO7: To enhance students fruits and vegetable carving skills.

PSO8: Application of knowledge develop a scientific outlook and apply the knowledge with respect to food technology.
CO3: To make students aware about various utensils in artistic presentation of foods and their handling.
CO5: To make students prepare various desserts with attractive shape and colour.

PSO9: Ethical awareness to train students in professional and ethical attitude, effective communication skills, team work skills, and multidisciplinary approaches related to food technology and engineering.
CO7: To enhance students' fruits and vegetable carving skills.

PSO10: Team Work understand the basic concepts, fundamental principles and experimental findings and the scientific theories related to food technology, food science and food technology and engineering and its other fields related to the programme.
CO2: To make students aware about various equipments in artistic presentation of foods and their handling.
CO3: To make students aware about various utensils in artistic presentation of foods and their handling.
CO4: To make various products with different colours and shape to increase its attractiveness.
CO6: To make students prepare various healthy and colourful soups
CO7: To enhance students fruits and vegetable carving skills.

PSO11: Environmental sustainability develop various communication skills such and reading, listening and speaking skills to express ideas and views clearly and effectively.
CO6: To make students prepare various healthy and colorful soups.

PSO12: Lifelong learning propose novel ideas in explain the scientific data, fact and figures related to science and technology.
CO2: To make students aware about various equipments in artistic presentation of foods and their handling.
CO5: To make students prepare various desserts with attractive shape and colour.

Theory Paper No- ENG-181-AEC-Functional English

Maximum Marks: 30 **Credits: 2**
Teaching Period: 2 /week **Teaching Load: 30 Theory Period/Semester**

Theory Paper No- FTR-185-VEC-Digital & Technology Solutions

Maximum Marks: 30 **Credits: 2**
Teaching Period: 2/week **Teaching Load: 30 Theory Period/Semester**

Theory Paper No- 139-Co-curricular Course (CC)