Anekant Education Society's

Tuljaram Chaturchand College of Arts, Science & Commerce, Baramati

(Autonomous)

Two Year M.Sc Food Technology Degree

Program in Food Technology

(Faculty of Science)

CBCS Syllabus

FY M.Sc (Food Technology)

For Department of Food Technology and Research

Choice Based Credit System Syllabus

(2025 Pattern)

(As Per NEP-2020)

To be implemented from Academic Year 2025-2026

Title of the Programme: FY M.Sc. (Food Technology))

Preamble

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. M.Sc. 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 Post-Graduates degree equips students with the knowledge and skills necessary for a diverse range of fulfilling career paths. Food Technology post-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 Two-year degree program, students explore the significance of Farm to Fork processing by utilization of post-harvest technology. They learn tools, techniques, processes which are 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 post-graduate 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.

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Programme Specific Outcomes (PSOs)

PSO-1	**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.
PSO-2	**Communication Skills**	Develop various communication skills such as reading, listening and speaking skills to express ideas and views clearly and effectively.
PSO-3	**Critical Thinking**	Propose novel idea sin explaining the scientific data, facts and figures related to science and technology.
PSO-4	**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 the food industry and provide solutions for the challenges in the food industry as well as in agriculture.
PSO-5	**Sense of Inquiry**	Curiously ask relevant questions for better understanding of fundamental concepts and principles, scientific theories and applications related to the study.
PSO-6	**Use of Modern Tools**	Operate modern tools, equipment, instruments and laboratory techniques to perform the experiments and write the programs in different languages.
PSO-7	**Research Skills**	Understand how to design, collect, analyze, interpret and evaluate information/data that is relevant to food technology.
PSO-8	**Application of Knowledge**	Developascientificoutlookandapplytheknowledgewithrespecttofoodtechnology.
PSO-9	**Ethical Awareness**	To train students in professional and ethical attitude, effective communication skills,teamworkskillsandmultidisciplinaryapproachesrelatedtofoodtechnology and engineering.
PSO-10	**Teamwork**	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.
PSO-11	**Environment and Sustainability**	Develop various communication skills such as reading, listening and speaking skills to express ideas and views clearly and effectively.
PSO-12	**Lifelong Learning**	Propose novel ideas in explaining the scientific data, facts and figures related to science and technology.

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 & Associate 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. Bhosale Pallavi A.**	Member
5	**Ms. Shinde Soudamini S.** Assistant Professor, Department of Food Technology and Research, T. C. College, Baramati	Member
6.	**Ms. Vaishnavi Ankush Gaikwad** Assistant Professor, Department of Food Technology and Research, T. C. College, Baramati	Member
7.	**Ms. Prajakta Anil Gawade** Assistant Professor, Department of Food Technology and Research, T. C. College, Baramati	Member
8.	**Ms. Aarti Dongare** Assistant Professor, M.Sc. Food Science & Technology	Vice-Chancellor Nominee Subject Expert from SPPU, Pune
9.	**Mr. Gatade Abhijeet** Assistant Professor, Shivaji University, Kolhapur	Subject Expert from Outside the Parent University
10.	**Mr. Pathan Fayaz L.** Associate Professor, MIT-ADT University	Subject Expert from Outside the Parent University
11.	**Mr. Gawate Dadasaheb** Director, Di-Roma Ice-cream, Ahmad Nagar	Representative from industry/corporate sector/allied areas
12.	**Mr. Vairagal Dnyaneshwar** Schreiber Dynamix Pvt. Ltd. Baramati	Member of the College Alumni
13.	**Ms. Vhora Payal**	UG Student
14.	**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 practical's 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 practical's must be included in syllabus from which 12 practical's 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.

4.. 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 Curses	Minor Curses	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

Course Structure for F Y. M.Sc (Food Technology) 2025-2026

Level	Semester	Major		Research Methodology	OJT/FP	RP	Cum. Cr.
		Mandatory	Elective				
6.0	I	FTR-501-MJM- Food Microbiology (T) (4 C)	FTR-506-MJE-Bakery Technology(T) (2 C) **OR** FTR-506-MJE-Confectionery Technology(T) (2 C)	FTR-521-RM Research Methodology (T)(4C)			**22 Cr.**
		FTR-502-MJM- Food Chemistry & Analysis (T) (4C)					
		FTR-503-MJM- Nutrition Science (T) (2 C)	FTR-507-MJE-Bakery Technology(P) (2 C) **OR** FTR-507-MJE-Confectionery Technology(P) (2 C)				
		FTR-504-MJM- Food Microbiology (P) (2 C)					
		FTR-505-MJM- Food Chemistry & Analysis (P) (2 C)					
	II	FTR-551-MJM- Food Processing & Packaging (T) (4 C)	FTR-556-MJE-Beverage Technology(T) (2 C) **OR** FTR-556-MJE-Snacks Technology(T) (2 C)		FTR-558-OJT/ FP (4 C)		22 Cr.
		FTR-552-MJM- Food Additives & Toxicology (T) (4 C)					
		FTR-553-MJM Fermentation Technology (T) (2C)	FTR-557-MJE-Beverage Technology(P) (2 C) **OR** FTR-557-MJE Snacks Technology(P) (2 C)				
		FTR-554-MJM- Food Processing & Packaging (P) (2 C)					
		FTR-555-MJM-Fermentation Technology					

		(P) (2C)					
Cum. Cr.		**28**	**8**	**4**	**4**	**-**	**44**

Sem	Course Type	Course Code	Course Title	Theory/ Practical	Credits
I	Major Mandatory	FTR-501-MJM	Food Microbiology	Theory	02
	Major Mandatory	FTR -502-MJM	Food Chemistry and Analysis	Theory	02
	Major Mandatory	FTR -503-MJM	Nutrition Science	Theory	02
	Major Mandatory	FTR -504-MJM	Food Microbiology	Practical	02
	Major Mandatory	FTR -505-MJM	Food Chemistry and Analysis	Practical	02
	Major Elective (MJE)	FTR -506-MJE(A)	Bakery Technology	Theory (Any one)	02
		FTR -506-MJE(B)	Confectionery Technology		
	Major Elective (MJE)	FTR -507- MJE (A)	Bakery Technology	Practical (any one)	02
		FTR -507- MJE (B)	Confectionery Technology		
	Research Methodology	FTR -508-RM	Research Methodology	Theory	02
	Total Credits Semester-I				**22**
II	Major Mandatory	FTR -551-MJM	Food Processing and Packaging	Theory	02
	Major Mandatory	FTR -552-MJM	Food Additives and Toxicology	Theory	02
	Major Mandatory	FTR -553-MJM	Fermentation Technology	Theory	02
	Major Mandatory	FTR -554-MJM	Food Processing and Packaging	Practical	02
	Major Mandatory	FTR -555-MJM	Fermentation technology	Practical	02
	Major Elective (MJE)	FTR -556-MJE(A)	Beverage Technology	Theory (Any two)	02
		FTR -556-MJE(B)	Snacks technology		
	Major Elective (MJE)	FTR -557-MN	Beverage Technology	Practical (Any one)	02
		FTR -557-MN	Snacks Technology		
	On Job Training(OJT)	FTR -558-OJT	On Job Training/Field Projects	Practical	04
	Total Credits Semester-II				**22**
	Total Credits Semester-I+ II				**44**

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

Name of the Programme : M.Sc.. Food Technology & Research

Programme Code : FTR

Class : F.Y M.Sc..

Semester : II

Course Type : Major Mandatory (T)

Course Code : FTR-551-MJM

Course Title : Food Processing & Packaging

No. of Credits : 04

No. of Teaching Hours : 60

Course Objectives:

- Cold preservation and freezers
- Dehydration & Irradiation
- Food Packaging
- Thermal Processing
- Properties of packaging material
- Working of packaging instruments

Course Outcomes:

CO1: Student will earn about the food groups.
CO2: Student will study about the different cooking methods
CO3: The students may know about working of various equipment used in food processing industries.
CO4: Students will study about the history food processing technology.
CO5: The students will learn about the Scope & opportunities in food industries.
CO6: Students will get knowledge about food preservation techniques.
CO7: The students will know about the advantages & disadvantages of cooking.

Topics and Learning Points

Unit I: Preservation by low temperature **12 Periods**

1.1 Freezing: requirements of refrigerated storage-controlled low temperature
1.2 air circulation and humidity
1.3 changes in food during refrigerated storage
1.4 progressive freezing, and changes during freezing-concentration effect and ice crystal damage, freezer burn.
1.5 Refrigeration load, factors determining freezing rate-food composition and non - compositional influences.

Unit II: Thermal and Non-Thermal Processing **10 Periods**

2.1 Introduction, classification of Thermal Processes
2.2 Principles of thermal processing
2.3 Thermal resistance of microorganisms, Thermal death time, Lethality concept
2.4 Characterization of heat penetration data, Thermal process Calculations.

Unit III: Food Irradiation and Microwave Heating **8 Periods**

3.1 Ionizing radiation and sources, unit of radiations,
3.2 Direct and indirect radiation effects, safety and wholesomeness of irradiated food.
3.3 Microwave heating and applications, High pressure processing,
3.4 Hurdle Technology, Cold plasma.

Unit IV: Packaging of Foods **6 Periods**

4.1 Packaging: Properties of packaging material,
4.2 factors determining the packaging requirements of various foods and brief description of packaging of frozen products,
4.3 dried products, fats and oils and thermally processed foods.

Unit V: Advances in packaging technology **7 Periods**

5.1 Introduction, Active packaging,
5.2 Modified atmospheric packaging,
5.3 Aseptic packaging, packages for microwave ovens
5.4 Biodegradable plastics, Edible gums, Coatings.

Unit VI: Packaging equipment and machinery **7 Periods**

6.1 Vacuum packaging machine,
6.2 CA and MA packaging machine, Gas packaging machine, Seal and shrink packaging machine.

6.3 Form and fill sealing machine,
6.4 Aseptic packaging systems, Retort pouches
6.5 Bottling machines, Package printing machines

References:

- Food Science , Norman Potter
- Food Facts & Principles, Shakuntala Maney
- Fruit & Vegetable Preservation, Shrivastava of Foods, Z. Berk

Mapping of Program Outcomes with Course Outcomes

Class: FYMSc Subject: Food Processing & Packaging
Course Type: Major Course Code: FTR-551-MJM
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	-	-	-	-	-	-	-	3	3	-	-
CO2	1	1	-	-	-	3	-	-	-	1	3	-
CO3	-	1	-	2	1	-	-	3	-	-	-	-
CO4	1	-	2	-	-	-	1	-	-	1	-	3
CO5	2	-	-	-	1	-	-	2	1	2	1	-
CO6	1	-	-	-	1	4	-	-	1	1	-	-
CO7	-	-	1	-	-	-	-	-	1	-	-	-

Justification for the mapping

PO1: 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: Student will learn about the food groups.
CO2: Student will study about the different cooking methods
CO4: Students will study about the history food processing technology.
CO5: The students will learn about the Scope & opportunities in food industries.
CO6: Students will get knowledge about food preservation techniques.

PO2: Communication Skills - Develop various communication skills such as reading, listening and speaking skills to express ideas and views clearly and effectively.
CO2: Student will study about the different cooking methods
CO3: The students may know about working of various equipment used in food processing industries.

PO3: Critical Thinking- Propose novel idea sin explaining the scientific data, facts and figures related to science and technology.
CO4: Students will study about the history food processing technology.
CO7: The students will know about the advantages & disadvantages of cooking.

PO4: 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.
CO3: The students may know about working of various equipment used in food processing industries.

PO5: Sense of Inquiry Curiously ask relevant questions for better understanding of fundamental concepts and principles, scientific theories and applications related to the study.
CO3: The students may know about working of various equipment used in food processing industries.
CO5: The students will learn about the Scope & opportunities in food industries.
CO6: Students will get knowledge about food preservation techniques.

PO6: Use of modern tools To operate modern tools, equipment, instrument and laboratory techniques to perform the experiments and write the programmes in the different languages.
CO2: Student will study about the different cooking methods
CO6: Students will get knowledge about food preservation techniques.

PO7: Research skills Understand how to design, collect, analyze, interpret and evaluate information/data that is relevant to food technology.
CO4: Students will study about the history food processing technology.

PO8: Application of knowledge Develop a scientific outlook and apply the knowledge with respect to food technology.
CO3: The students may know about working of various equipment used in food processing industries.
CO5: The students will learn about the Scope & opportunities in food industries.

PO9: 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.
CO1: Student will learn about the food groups.
CO5: The students will learn about the Scope & opportunities in food industries.
CO6: Students will get knowledge about food preservation techniques.
CO7: The students will know about the advantages & disadvantages of cooking.

PO10: 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.
CO1: Student will learn about the food groups.

CO2: Student will study about the different cooking methods
CO4: Students will study about the history food processing technology.
CO5: The students will learn about the Scope & opportunities in food industries.
CO6: Students will get knowledge about food preservation techniques.

PO11: Environmental sustainability Develop various communication skills such and reading, listening and speaking skills to express ideas and views clearly and effectively.
CO2: Student will study about the different cooking methods
CO5: The students will learn about the Scope & opportunities in food industries.

PO12: Lifelong learning Propose novel ideas in explain the scientific data, fact and figures related to science and technology.
CO4: Students will study about the history food processing technology.

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

Name of the Programme : M.Sc.. Food Technology & Research

Programme Code : FTR

Class : F.Y M.Sc..

Semester : II

CourseType : Major Mandatory (T)

Course Code : FTR-552-MJM

CourseTitle : Food Additives & Toxicology

No. of Credits : 04

No.of Teaching Hours : 60

Course Objectives:

- To study about different food additives & their functions.
- To learn about toxicants in food processing industry.
- To learn about the laws related to food additives.
- To know about types of contamination in food industry.
- To understand about the formulation of food product by using additives.
- To get knowledge about difference between Additives & Adulterants

CO1: Student will learn about the food groups.
CO2: Student will study about the different cooking methods
CO3: the students may know about working of various utensils used in food processing industries.
CO4: Students will get knowledge about food preservation techniques
CO5: The students will learn about the weight and measures used in food processing
CO6: Students will get knowledge about mode of heat transfer.
CO7: The students will know about the refrigration system.

Topics and Learning Points

Unit-I: Introduction to Food Additives **13 Periods**

1.1 Definitions of Food Additives, Classification and Functions,
1.2 Legitimate uses of Additives in foods, Intentional &Non Intentional additives,
1.3 Indirect food additives
1.4 Difference between Additives & Adulterants
1.5 Food Formulation
1.6 Food uses and functions in formulations.

Unit-II: Properties of Additives **8 Periods**

2.1 Toxicological evaluation of food additives,
2.2 Acute and chronic studies. LD50.
2.3 Analytical methods: chemical and instrumental.

Unit-III: Food additives - **12 Periods**

3.1 Various additives such as preservatives, antioxidants, emulsifiers, sequestrants, humectants, stabilizers with respect to chemistry
3.2 food uses and functions in formulations

Unit-IV: Food additives – II **10 Periods**

4.1 Colours, flavours, sweeteners, acidulants with respect to chemistry
4.2 food uses and functions in formulations, indirect food additives

Unit V: Laws related to Food Additives **10 Periods**

6.1 Food contaminants, physical, chemical, microbial and other contaminants;
6.2 food toxicants.

References:

- 1 Fennema, O.R. Ed. 1976. Principles of Food Science: Part-I Food Chemistry. MarcelDekker, New York.
- Potter, N.N. 1978. Food Science. 3rd Ed. AVI, Westport.
- Branen A.L. and Davidson, P.M. 1983. Antimicrobials in Foods. Marcel Dekker, NewYork.
- Furia, T.E. 1980, Handbook of food additives, Vol I and Vol II.

Mapping of Program Outcomes with Course Outcomes

Class: FYMSc Subject: Food Additives & Toxicology

Course Type: Major Course Code: FTR-552-MJM

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	-	-	-	-	-	-	-	3	2	-	-
CO2	1	1	-	-	-	3	-	-	-	-	3	-
CO3	-	1	-	2	1	-	-	3	-	-	-	-
CO4	1	-	2	-	-	-	1	-	-	2	-	3
CO5	-	-	-	3	-	3	2	-	-	-	-	-
CO6	2	-	-	2	-	3	2	-	1	-	-	-
CO7	-	-	-	3	2	3	-	1	-	2	-	1

PO1: 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: Student will learn about the food groups.
CO2: Student will study about the different cooking methods
CO4: Students will get knowledge about food preservation techniques
CO6: Students will get knowledge about mode of heat transfer.

PO2: Communication Skills - Develop various communication skills such as reading, listening and speaking skills to express ideas and views clearly and effectively.
CO2: Student will study about the different cooking methods
CO3: the students may know about working of various utensils used in food processing industries.

PO3: Critical Thinking- Propose novel idea sin explaining the scientific data, facts and figures related to science and technology**.**
CO4: Students will get knowledge about food preservation techniques

PO4: 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.
CO3: the students may know about working of various utensils used in food processing industries.
CO5: The students will learn about the weight and measures used in food processing
CO6: Students will get knowledge about mode of heat transfer.
CO7: The students will know about the refrigration system.

PO5: Sense of Inquiry Curiously ask relevant questions for better understanding of fundamental concepts and principles, scientific theories and applications related to the study.
CO3: the students may know about working of various utensils used in food processing industries.
CO7: The students will know about the refrigration system.

PO6: Use of modern tools operate modern tools, equipment, instrument and laboratory techniques to perform the experiments and write the programmes in the different languages.
CO2: Student will study about the different cooking methods
CO5: The students will learn about the weight and measures used in food processing
CO6: Students will get knowledge about mode of heat transfer.
CO7: The students will know about the refrigration system.

PO7: Research skills Understand how to design, collect, analyze, interpret and evaluate information/data that is relevant to food technology.
CO4: Students will get knowledge about food preservation techniques
CO5: The students will learn about the weight and measures used in food processing
CO6: Students will get knowledge about mode of heat transfer.

PO8: Application of knowledge Develop a scientific outlook and apply the knowledge with respect to food technology.
CO3: the students may know about working of various utensils used in food processing industries.
CO7: The students will know about the refrigration system.

PO9: 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.
CO1: Student will learn about the food groups.
CO6: Students will get knowledge about mode of heat transfer.

PO10: 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.
CO1: Student will learn about the food groups.
CO4: Students will get knowledge about food preservation techniques
CO7: The students will know about the refrigration system.

PO11: Environmental sustainability. Develop various communication skills such and reading, listening and speaking skills to express ideas and views clearly and effectively.
CO2: Student will study about the different cooking methods

PO12: Lifelong learning Propose novel ideas in explain the scientific data, fact and figures related to science and technology.
CO4: Students will get knowledge about food preservation techniques
CO7: The students will know about the refrigration system.

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

Name of the Programme : M.Sc.. Food Technology & Research

Programme Code : FTR

Class : F.Y M.Sc..

Semester : II

Course Type : Major Mandatory (T)

Course Code : FTR-553-MJM

Course Title : Fermentation Technology

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To learn about the fermentation technology
- To study the history & innovations in fermentation
- To study about the scope of food fermentation
- To learn about important fermentation techniques and equipments.
- To know about processing of different types of fermented alcoholic beverages.
- To learn about principles of downstream processing and product recovery.

Course Outcomes:

CO1: Students will get knowledge about the importance of food safety and morphology of micro-organisms.
CO2: Students will have a thorough understanding of various factors responsible for food spoilage.
CO3: The students will know the important microorganisms used in food processing industry.
CO4: Student will learn about the different types of hazards
CO5: Students will get knowledge about accreditation and auditing
CO6: Students will earn about important microorganisms used in food processing industry.
CO7: Students will learn about growth curve.

Topics and Learning Points

Unit-I: Introduction: **08 Periods**

1.1 Introduction, History
1.2 Fermented Foods: Past, Present and future

Unit – II: Microorganisms involved in Food Fermentations **06 Period**

2.1 Fermentation –definition and types
2.2 Microorganisms used in food fermentations

Unit –III: Fermentation of Alcoholic Beverages **07 Periods**

3.1 Malt beverages
3.2 Distilled liquors: Wine, Beer etc.
3.3 Fermentation of Vinegar- history, introduction, process, types , defects and diseases
3.4 Equipments used for fermented products

Unit – 4: Oriental fermented foods - **09 Periods**

4.1 Milk based fermented product: Kefir, yoghurt,
4.2 Meat based fermented products: dry semidry sausage, salami, fermented fish, preserved egg.
4.3 Plant based fermented product: Sauerkraut, kombucha, miso, Kimchi, temphesoysauce, idli, dosa, minchin, soybean cheese, natto.

References:

- Principles of fermentation technology/Peter F. Stanbury, Allan Whitaker, Stephen J. Hall.- 2nd ed.
- Basic of Fermentation Technology, S M Reddy
- Fruit & Vegetable Preservation, Shrivastava
- Food Microbiology, Frazier

Mapping of Program Outcomes with Course Outcomes

Class: FYMSc Subject: Fermentation Technology
Course Type: Major Course Code: FTR-553-MJM
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	6	-	-	-	-	-	-	-	2	2	-	-
CO2	-	-	2	6	5	6	6	-	-	-	-	6
CO3	-	-	-	-	-	-	-	-	-	-	-	2
CO4	-	2	-	-	2	-	-	4	-	-	6	-
CO5	-	-	2	-	2	2	-	2	-	2	-	-
CO6	4	-	-	-	2	-	-	-	-	2	-	-
CO7	2	-	1	4	2	6	-	-	-	-	-	-

Justification for the mapping

PO1: 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: Students will get knowledge about the importance of food safety and the morphology of micro-organisms.
CO6 Students will earn about important microorganisms used in food processing industry.
CO7: Students will learn about growth curve.

PO2 Communication Skills - Develop various communication skills such as reading, listening and speaking skills to express ideas and views clearly and effectively.
CO4: Student will learn about the different types of hazards

PO3: Critical Thinking- Propose novel idea sin explaining the scientific data, facts and figures related to science and technology**.**
CO2: Students will have a thorough understanding of various factors responsible for food spoilage.
CO5: Students will get knowledge about accreditation and auditing
CO7: Students will learn about growth curve.

PO4: 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.
CO1: Students will get knowledge about the importance of food safety and morphology of

micro-organisms.
CO7: Students will learn about growth curve.

PO5: Sense of Inquiry Curiously ask relevant questions for better understanding of fundamental concepts and principles, scientific theories and applications related to the study.
CO2: Students will have a thorough understanding of various factors responsible for food spoilage.
CO4: Student will learn about the different types of hazards
CO5: Students will get knowledge about accreditation and auditing
CO6 Students will earn about important microorganisms used in food processing industry.
CO7: Students will learn about growth curve.

PO6: Use of modern tools operate modern tools, equipment, instrument and laboratory techniques to perform the experiments and write the programmes in the different languages.
CO2: Students will have a thorough understanding of various factors responsible for food spoilage.
CO5: Students will get knowledge about accreditation and auditing
CO7: Students will learn about growth curve.

PO7: Research skills Understand how to design, collect, analyze, interpret and evaluate information/data that is relevant to food technology.
CO2: Students will have a thorough understanding of various factors responsible for food spoilage.

PO8: Application of knowledge Develop a scientific outlook and apply the knowledge with respect to food technology.
CO4: Student will learn about the different types of hazards
CO5: Students will get knowledge about accreditation and auditing

PO9: 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.
CO1: Students will get knowledge about the importance of food safety and morphology of micro-organisms.

PO10: 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.
CO1: Students will get knowledge about the importance of food safety and morphology of micro-organisms.
CO5: Students will get knowledge about accreditation and auditing
CO6 Students will earn about important microorganisms used in food processing industry.

PO11: Environmental sustainability Develop various communication skills such and reading, listening and speaking skills to express ideas and views clearly and effectively.
CO4: Student will learn about the different types of hazards

PO12: Lifelong learning Propose novel ideas in explain the scientific data, fact and figures related to science and technology.
CO2: Students will have a thorough understanding of various factors responsible for food spoilage.
CO3: The students will know the important microorganisms used in food processing industry.

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

Name of the Programme : M.Sc.. Food Technology & Research

Programme Code : FTR

Class : F.Y M.Sc..

Semester : II

Course Type : Major Mandatory (P)

Course Code : FTR-554-MJM

Course Title : Food Processing & Packaging

No. of Credits : 02

No. of Teaching Hours : 30

Course Objectives:

- To learn about the Cold preservation and freezers
- To know about Dehydration & Irradiation
- To get the knowledge about Food Packaging
- To know about Thermal Processing
- To know about Properties of packaging material
- To learn about Working of packaging instruments

Course Outcomes:

CO1: Students will get knowledge about the safety laboratory practices.
CO2: Students will learn about safety measures of various laboratory chemicals.
CO3: Students will have a thorough understanding of different microorganisms.
CO4: The students will know the cultivation of microbes by using various food samples.
CO5: Student will learn about importance of surface sanitation.

CO6: Students will learn about morphology of bacteria.
CO7: The students will know about the quality analysis of water.

Topics and Learning Points

Sr. No.	Practical Name	Periods
1.	Comparison of conventional and microwave processing of food	**2P**
2.	Frozen food processing	**2P**
3.	Drying of food using tray dryer/other dryers	**3P**
4.	Preservation of food by using canning(Fruit/Vegetable)	**2P**
5.	Osmotic dehydration	**2P**
6.	Identification and testing of packaging materials	**2P**
7.	Determination of tensile strength of given packaging material	**2P**
8.	Cut out analysis of canned food	**2P**
9.	Determining water absorption capacity of packaging material	**2P**
10.	Determining bursting strength of packaging material	**2P**
11.	Determining tearing strength of packaging material	**2P**
12.	To perform vacuum packaging of food sample and carry out its storage study	**1P**
13.	Testing of lacquered tinplate sheets	**1P**
14.	Determination of water vapour transmission rate of package films	**2P**
15.	Pre-packaging practices followed for packaging fruits and vegetables	**2P**
16.	Packaging and labelling of the product- packaging design, graphics, labelling	**1P**

References:

- Food Science , Norman Potter
- Food Facts & Principles, Shakuntala Maney
- Fruit & Vegetable Preservation, Shrivastava

Mapping of Program Outcomes with Course Outcomes

Class: FYMSc Subject: Food Processing & Packaging
Course Type: Major Course Code: FTR-554-MJM
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	-	-	-	-	-	-	-	3	3	-	-
CO2	1	1	-	-	-	3	-	-	-	1	3	-
CO3	-	1	-	2	1	-	-	3	-	-	-	-
CO4	1	-	2	-	-	-	1	-	-	1	-	3
CO5	2	-	-	-	1	-	-	2	1	2	1	-
CO6	1	-	-	-	1	4	-	-	1	1	-	-
CO7	-	-	1	-	-	-	-	-	1	-	-	-

Justification for the mapping

PO1: 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: Students will get knowledge about the safety laboratory practices.
CO6: Students will learn about morphology of bacteria.
CO7: The students will know about the quality analysis of water.

PO2: Communication Skills - Develop various communication skills such as reading, listening and speaking skills to express ideas and views clearly and effectively.
CO4: The students will know the cultivation of microbes by using various food samples.

PO3: Critical Thinking- Propose novel idea sin explaining the scientific data, facts and figures related to science and technology**.**
CO2: Students will learn about safety measures of various laboratory chemicals.
CO5: Student will learn about importance of surface sanitation.
CO7: The students will know about the quality analysis of water.

PO4: 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.
CO2: Students will learn about safety measures of various laboratory chemicals.
CO7: The students will know about the quality analysis of water.

PO5: Sense of Inquiry Curiously ask relevant questions for better understanding of fundamental concepts and principles, scientific theories and applications related to the study.
CO2: Students will learn about safety measures of various laboratory chemicals.
CO4: The students will know the cultivation of microbes by using various food samples.
CO5: Student will learn about importance of surface sanitation.
CO6: Students will learn about morphology of bacteria.
CO7: The students will know about the quality analysis of water.

PO6: Use of modern tools operate modern tools, equipment, instrument and laboratory techniques to perform the experiments and write the programmes in the different languages.
CO2: Students will learn about safety measures of various laboratory chemicals.
CO5: Student will learn about importance of surface sanitation.
CO7: The students will know about the quality analysis of water.

PO7: Research skills Understand how to design, collect, analyze, interpret and evaluate information/data that is relevant to food technology.
CO2: Students will learn about safety measures of various laboratory chemicals.

PO8: Application of knowledge Develop a scientific outlook and apply the knowledge with respect to food technology.
CO4: The students will know the cultivation of microbes by using various food samples.
CO5: Student will learn about importance of surface sanitation.

PO9: 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.
CO1: Students will get knowledge about the safety laboratory practices.

PO10: 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.
CO1: Students will get knowledge about the safety laboratory practices.
CO5: Student will learn about importance of surface sanitation.
CO6: Students will learn about morphology of bacteria.

PO11: Environmental sustainability. Develop various communication skills such and reading, listening and speaking skills to express ideas and views clearly and effectively.
CO4: The students will know the cultivation of microbes by using various food samples.

PO12: Lifelong learning Propose novel ideas in explain the scientific data, fact and figures related to science and technology.
CO2: Students will learn about safety measures of various laboratory chemicals.
CO3: Students will have a thorough understanding of different microorganisms.

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

Name of the Programme :M.Sc.. Food Technology & Research

Programme Code : FTR

Class : F.Y M.Sc..

Semester :II

Course Type :Major Mandatory (P)

Course Code :FTR-555-MJM

Course Title :Fermentation Technology

No. of Credits :02

No. of Teaching Hours :30

Course Objectives:

- To learn about the fermentation technology
- To study the history & innovations in fermentation
- To study about the scope of food fermentation
- To learn about important fermentation techniques and equipments
- To know about processing of different types of fermented alcoholic beverages.
- To learn about principles of downstream processing and product recovery.
- To learn about different oriented products.

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 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.

Topics and Learning Points

Sr. No.	Practical Name	Periods
1.	To study the types of fermentation	**3P**
2.	Preparation of Kefir	**2P**
3.	Preparation of Saurkraut	**2P**
4.	Preparation of yogurt	**2P**
5.	Preparation of wine	**2P**
6.	Preparation of beer	**2P**
7.	Preparation of soysauce	**2P**
8.	Preparation of miso	**2P**
9.	Preparation of Cheese	**2P**
10.	Prep[aration of Kombucha	**2P**
11.	Preparation of bakers yeast	**2P**
12.	Preparation of Idli	**2P**
13.	Analysis of fermented food products	**2P**
14.	Visit to winery or any other fermented products based industry and report submission.	**3P**

References:

- Bamji MS, Krishnaswamy K, Brahmam GNV (2009). *Textbook of Human Nutrition*, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd.
- Srilakshmi (2007). *Food Science*, 4th Edition. New Age International Ltd. 29
- Wardlaw MG, Paul M Insel Mosby (1996). Perspectives in Nutrition, Third Edition.
- B. Srilakshmi (2007) Dietetics, Revised Fifth Edition, New Age International Publishers
- B. Srilakshmi (2011) Nutrition Science, Third Edition, New Age International Publishers

Mapping of Program Outcomes with Course Outcomes

FYMSc Subject: Fermentation Technology

Course Type: Major Course Code: FTR-555-MJM

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	P O6	PO7	PO8	PO9	PO10	PO11	PO12
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

PO1: 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.

PO2: 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.

PO3: 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.

PO4: 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' 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.

PO5: 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.

PO6: Use of modern tools operates 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 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.

PO7: Research skills Understand how to design, collect, analyze, interpret and evaluate information/data that is relevant to food technology.
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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.
CO 6: To study about the composition of different food groups.
CO 7: To study about Toxins present in foods and its elimination.

PO8: 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 in human diet.
CO 5: To make student understand basic principles of cooking and its effect on different foods.

PO9: 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.

PO10: 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.
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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.

PO 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.

PO 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 MSc. Food Technology & Research (2025 Pattern)

Name of the Programme : **M.Sc.. Food Technology & Research**

Programme Code : **FTR**

Class : **F.Y M.Sc..**

Semester : **II**

Course Type : **Major Elective (T)**

Course Code : **FTR-561-MJE**

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:

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.

Topics and Learning Points

Unit I: **5 Periods**

1.1 History, importance of beverages and status of beverage industry
1.2 Types of Beverages, history of beverage industry

Unit-II: Processing of beverages **10 Periods**

2.1 Juice based beverages processing, Synthetic, still, carbonated, low-calorie and dry beverages
2.2 Isotonic and sports drinks, dairy based, alcoholic beverages fruit beverages, speciality beverages
2.3 Tea, coffee, cocoa, spices, plant extracts

Unit-III: Quality of Beverages **10 Periods**

3.1 FSSAI specifications for beverages, Ingredients, manufacturing and packaging processesand equipment for different beverages
3.2 Sweeteners, colorants, acidulants, clouding and clarifying and flavouring agents for beverages, Carbon dioxide and carbonation, Quality tests and control in beverages;
3.3 Miscellaneous beverages Coconut water, sweet toddy, sugar cane juice, coconut milk, flavoured syrups

Unit-IV: Water treatment **5 Periods**

4.1 Water treatment and quality of process water
4.2 water purification, packaged drinking water Processing

References:

- Fruit & Vegetable Preservation, Shrivastava
- Food Science , Norman Potter
- Food Facts & Principles, Shakuntala Maney

Mapping of Program Outcomes with Course Outcomes

Class: F.Y.MSc Subject: Beverage Technology
Course Type: Major Course Code: FTR-561-MJE
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

PO1: 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.
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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.

PO2: 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.

PO3: 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.

PO4: 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.
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CO 6: To study about the composition of different food groups.
CO 7: To study about Toxins present in foods and its elimination.

PO5: 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.

PO6: 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.

PO7: 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 in human diet.
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PO8: 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 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.

PO10: 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.
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CO 6: To study about the composition of different food groups.

PO12: 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 MSc. Food Technology & Research (2025 Pattern)

Name of the Programme : **M.Sc. Food Technology & Research**

Programme Code : **FTR**

Class : **F.Y M.Sc.**

Semester : **II**

Course Type : **Major Elective**

Course Code : **FTR-561-MJE**

Course Title : **Snacks Technology**

No.of Credits : **02**

No. of Teaching Hours : **30**

Course Objectives:

1. To develop the skills for processing of different types of snack products
2. To get knowledge of Indian snack food markets.
3. To learn about the extrusion techniques
4. To study the history &types of snacks.
5. To get knowledge of fruits and vegetables based snacks
6. Students will have thorough knowledge of different types of cereal based snacks food items available in market.

Course Outcomes:

CO1: Students will get knowledge about the food science & technology.
CO2: Students will have a thorough understanding of Indian Standards & International Organization.
CO3: The students will know the classification & health benefits of food.
CO4: Student will learn about the basic of nutrients.
CO5: Students will learn about various regulations related to food science.
CO6: Students will learn about various laws related to food science.
CO7: Students will get knowledge about food processing technology.

Topics and Learning Points

Unit I: **5 Periods**

1.1 Introduction
1.2 history of snack
1.3 types of snack

Unit II: Grain Based Snacks **10 Periods**

2.1 Overview of grain-based snacks: whole grains – roasted, toasted, puffed, popped and flakes Coated grains-salted
2.2 Spiced and sweetened Flour based snack– batter and dough based products
2.3 savoury and farsans
2.3 formulated chipsand wafers, papads.

Unit III: Other Snack Foods **10 Periods**

1.1 Technology for fruit and vegetable based snacks: chips, wafers, papads etc.
1.2 Technology for coated nuts – salted,
1.3 spiced and sweetened products- chikkis, Singbhujia,
1.4 Technology for RTE puffed snack and puffing, hot air puffing, explosion puffing, gun puffing etc.

Unit IV: **5 Periods**

4.1 Extrusion method
4.2 types of extruder
4.3 types of extruded product

References:

- Food Science , Norman Potter
- Food Facts & Principles, Shakuntala Maney
- Food science, Shrilakshm

Mapping of Programme Outcomes with Course Outcomes

Class: FYMSc Subject: Snacks Technology
Course Type: Major Course Code: FTR-561-MJE
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	6	-	-	-	-	-	-	-	2	2	-	-
CO2	-	-	2	6	5	6	6	-	-	-	-	6
CO3	-	-	-	-	-	-	-	-	-	-	-	2
CO4	-	2	-	-	2	-	-	4	-	-	6	-
CO5	-	-	2	-	2	2	-	2	-	2	-	6

CO6	**4**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**2**	**2**	**-**	**6**
CO7	**2**	**-**	**1**	**4**	**2**	**6**	**-**	**-**	**-**	**-**	**-**	**-**

Justification for the mapping

PO1: 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: Students will get knowledge about the food science & technology.
CO6: Students will learn about various laws related to food science.
CO7: Students will get knowledge about food processing technology.

PO2: Communication Skills - Develop various communication skills such as reading, listening and speaking skills to express ideas and views clearly and effectively.
CO4: Student will learn about the basic of nutrients.

PO3 Critical Thinking- Propose novel idea sin explaining the scientific data, facts and figures related to science and technology**.**
CO2: Students will have a thorough understanding of Indian Standards & International Organization.
CO5: Students will learn about various regulations related to food science.
CO7: Students will get knowledge about food processing technology.

PO4: 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.
CO2: Students will have a thorough understanding of Indian Standards & International Organization.
CO7: Students will get knowledge about food processing technology.

PO5: Sense of Inquiry Curiously ask relevant questions for better understanding of fundamental concepts and principles, scientific theories and applications related to the study.
CO2: Students will have a thorough understanding of Indian Standards & International Organization.
CO4: Student will learn about the basic of nutrients.
CO5: Students will learn about various regulations related to food science.
CO6: Students will learn about various laws related to food science.
CO7: Students will get knowledge about food processing technology.

PO6: Use of modern tools operate modern tools, equipment, instrument and laboratory techniques to perform the experiments and write the programmes in the different languages.
CO2: Students will have a thorough understanding of Indian Standards & International Organization.

CO5: Students will learn about various regulations related to food science.
CO7: Students will get knowledge about food processing technology.

PO7: Research skills Understand how to design, collect, analyze, interpret and evaluate information/data that is relevant to food technology.
CO2: Students will have a thorough understanding of Indian Standards & International Organization.

PO8: Application of knowledge develop a scientific outlook and apply the knowledge with respect to food technology.
CO4: Student will learn about the basic of nutrients.
CO5: Students will learn about various regulations related to food science.

PO9: 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.
CO2: Students will have a thorough understanding of Indian Standards & International Organization.
CO6: Students will learn about various laws related to food science.

PO10: 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.
CO1: Students will get knowledge about the food science & technology.
CO5: Students will learn about various regulations related to food science.
CO6: Students will learn about various laws related to food science.

PO11: Environmental sustainability Develop various communication skills such and reading, listening and speaking skills to express ideas and views clearly and effectively.
CO4: Student will learn about the basic of nutrients.

PO12: Lifelong learning Propose novel ideas in explain the scientific data, fact and figures related to science and technology.
CO2: Students will have a thorough understanding of Indian Standards & International Organization.
CO3: The students will know the classification & health benefits of food.
CO5: Students will learn about various regulations related to food science.
CO6: Students will learn about various laws related to food science.

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

Name of the Programme: M.Sc. Food Technology & Research

Programme Code **: FTR**

Class **: F.Y M.Sc.**

Semester ***II***

Course Type **:Major Elective**

Course Code **:FTR-562-MJE**

Course Title **:Beverage Technology**

No.of Credits **02**

No.of Teaching Hours **30**

Course Objectives:

- To learn about manufacturing of different types of beverages.
- To get knowledge about chemical analysis of beverages
- To learn about processing of different types of beverages.
- To study about quality analysis of water
- To provide the knowledge about different beverage industry
- To learn about different processing techniques used in beverage industry

Course Outcomes:

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

Topics and Learning Points

Sr. No.	Practical Name	Periods

1.	Quality analysis of water from different sources and treatments	**3P**
2.	Determination of aqueous extraction of tea/coffee	**2P**
3.	Detection of sodium benzoate in beverage	**2P**
4.	Measurement of pH and acidity of beverage	**2P**
5.	Detection of E. Coli in beverage	**2P**
6.	Measurement of CO2 content of carbonated beverage	**2P**
7.	Determination of caffeine in beverages	**2P**
8.	Determination of tannins in wine	**2P**
9.	Preparation of Instant Tea/coffee	**2P**
10.	Preparation of carbonated beverage	**2P**
11.	Specifications for different fruit beverages and preparation of fruits squash	**2P**
12.	Preparation of artificial lemon juice	**2P**
13.	Preparation of beverage using artificial sweetener	**2P**
14.	Preparation of Nectar	**2P**
15.	Visit to carbonation unit	**1P**

References:

- Food Science , Norman Potter
- Food Facts & Principles, Shakuntala Maney
- Food science, Shrilakshmi

Mapping of Program Outcomes with Course Outcomes

Class: F.Y.MSc. Subject: Beverage Technology

Course Type: Major Course Code: FTR-562-MJE

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

PO1: 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 colours and shape to increase its attractiveness.

PO2: 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 colours and shape to increase its attractiveness.

PO3: 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 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.

PO4: 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.
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.

PO5: 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 colourful soups

PO6: 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.

PO7: 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.

PO8: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.

PO9: 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.

PO10: 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 colorful soups
CO7: To enhance students fruits and vegetable carving skills.

PO11: 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.

PO12: 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.

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

Name of the Programme: M.Sc. Food Technology & Research

Programme Code **: FTR**

Class **:F.Y M.Sc..**

Semester ***II***

Course Type **:Major Elective**

Course Code **:FTR-562-MJE**

Course Title **:Snack Technology**

No.of Credits ***02***

No.of Teaching Hours **30**

Course Objectives:

- To learn about manufacturing of different types of snack foods.
- To get knowledge about processing of snack food items.
- To learn about processing of different types of snack foods
- To know about physical properties of extruded foods
- To provide the knowledge about different snack industry
- To learn about different processing techniques used in snack food industry

Course Outcomes:

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

Topics and Learning Points

Sr. No.	Practical Name	Periods
1.	Preparation of cereals based fried snack foods	2 P
2.	Preparation of legume based fried snack foods	2 P
3.	Preparation of cereal grain based puffed products	2 P
4.	To study the effect of frying time and temperature on potato chips	2 P
5.	Preparation of cereal and legume based roasted snack	2 P
6.	Physical properties of extruded foods(expansion, density, water index etc)	2 P
7.	Preparation of protein isolate and concentrate	2 P
8.	Preparation of noodles/vermicelli	2 P
9.	Preparation of weaning foods	2 P
10.	Determination of oil absorption capacity of noodles	2 P
11.	Effect of extrusion cooking on anti-nutritional factor	2 P
12.	Determination of shelf-life and packaging requirements of snack food products	3 P
13.	To study the extraction of oil	2 P
14.	Visit to industries Manufacturing snack foods.	2 P
15.	Visit to Extrusion industry	1 P

References:

- Food Science , Norman Potter
- Food Facts & Principles, Shakuntala Maney
- Food science, Shrilakshmi

Mapping of Program Outcomes with Course Outcomes

Class: F.Y.MSc. Subject: Snack Technology
Course Type: Major Course Code: FTR-562-MJE
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

PO1: 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.
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PO2: Communication Skills - Develop various communication skills such as reading, listening and speaking skills to express ideas and views clearly and effectively.
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PO3: Critical Thinking- Propose novel idea sin explaining the scientific data, facts and figures related to science and technology**.**
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PO4: 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.
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.

PO5: Sense of InquiryCuriously 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 colourful soups

PO6: 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.

PO7: 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.

PO8: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.

PO9: 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.

PO10: 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 colorful soups
CO7: To enhance students fruits and vegetable carving skills.

PO11: 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.

PO12: 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.

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

Name of the Programme: M.Sc. Food Technology

Programme Code : FTR

Class : F.Y M.Sc..

Semester II

Course Type : OJT/ FP

Course Code : FTR-581- OJT/ FP

Course Title : On Job Training/ Field Projects

No. of Credits 04

No. of Teaching Hours 60

Course Objectives:

- To understand the working of food processing industry.
- To impart knowledge and skills related to food processing industries
- To understand about the marketing survey of food product.
- To understand the operations used in food processing industry.
- To study about the different food standards used in food industry.
- To learn about the maintenance of personal hygiene & food safety in food processing industry.

Course Outcomes:

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