

Department of Food Sciences
University of the Punjab, Lahore
Course Outline



Programme	B.Sc. (Hons.) Food Science & Technology	Course Code	FST – 102	Credit Hours	3 (2-1)
Course Title	Food Processing and Preservation				
Course Introduction					
<p>This course is designed to provide a comprehensive understanding of the principles and methods of food processing and preservation. Students will explore various preservation techniques, including thermal, chemical, biological, and physical methods, and their impact on food quality and safety. As the food industry faces new challenges, this course covers both traditional methods and the latest technological advancements. Through lectures, hands-on laboratory sessions, and field visits, students will gain practical skills and insights into sustainable practices. By the end of this course, students will be equipped with the knowledge and expertise necessary to ensure food safety, extend shelf life, and maintain nutritional value.</p>					
Learning Outcomes					
<p>On the completion of the course, the students will:</p> <ol style="list-style-type: none"> 1. Understand the fundamental principles and methods of food processing and preservation. 2. Demonstrate proficiency in various preservation techniques, including thermal, chemical, biological, and physical methods. 3. Analyze the impact of processing and preservation on the nutritional and sensory qualities of food. 4. Apply quality control and safety standards in food processing and preservation practices. 5. Critically evaluate and implement emerging technologies and sustainable practices in the food industry. 					
THEORY					
Course Content					Assignments/Readings
Week 1	Unit-1				
	1.1 Postharvest Handling and Preparation of Foods for Processing				
	1.2 Introduction				
	1.3 Properties of Raw Materials				
	1.4 Handling, Storage, and Transportation of Raw Materials				

Week 2	<p align="center">Unit-II</p> <p>2.1 Preparatory Operations Cleaning and Sorting</p> <p>2.2 Grading</p>	
	<p>2.3 Size Reduction</p> <p>2.4 Sulphiting</p>	
Week 3	<p align="center">Unit-III</p> <p>3.1 Thermal Processing</p> <p>Principles & Applications:</p>	
	<p>3.2 Blanching, Pasteurization</p>	
Week 4	<p align="center">Unit-IV</p> <p>4.1 Caning Preparation of raw material</p> <p>4.2 Filling, syruping, lidding</p>	
	<p>4.3 Exhausting sealing, heat processing</p> <p>4.4 Cooling labelling and storage</p>	
Week 5	<p align="center">Unit-V</p> <p>5.1 Low temperature preservation Equipment</p> <p>5.2 Refrigeration system</p>	
	<p>5.3 Use of above freezing temperature</p> <p>5.4 Objectives, pre-treatment of food for low temperature storage</p> <p>5.5 cold storage procedure, factors affecting the cold storage of food</p>	
Week 6	<p align="center">Unit-VI</p> <p>6.1 Use of below freezing temperature</p> <p>6.2 Role of water in food</p>	

	<p>6.3 Forms of water in foods</p> <p>6.4 Advantages of Dried foods</p> <p>6.5 Sun drying</p>	
Week 7	<p style="text-align: center;">Unit-VII</p> <p>7.1 Dehydration</p> <p>7.2 Evaporation and concentration</p>	
	<p>7.3 Freeze Drying</p> <p>7.4 De-hydro freezing</p>	
	<p>7.5 Intermediate moisture food technology</p>	
Week 8	<p style="text-align: center;">Unit-VIII</p> <p>8.1 Use of chemical additives (definitions)</p> <p>8.2 Functions of Food additives</p>	
	<p>8.3 chemical additive as non-preservative</p>	
Week 9	<p style="text-align: center;">Unit-IX</p> <p>9.1 Chemical additive as Preservative</p>	
	<p>9.2 Food laws</p>	
Week 10	<p style="text-align: center;">Unit-X</p> <p>10.1 Objective of fermented foods</p>	
	<p>10.2 types of fermentation</p> <p>10.3 Changes in Foods as results of Fermentation</p>	
Week 11	<p style="text-align: center;">Unit-XI</p> <p>11.1 Types of fermented foods</p>	

	11.2 Use of irradiation 11.3 Electromagnetic radiation	
Week 12	Unit-XII 12.1 Use of ultraviolet radiation	
	12.2 Use of ionizing radiation	
Week 13	Unit- XIII 13.1 Commercial application of irradiation	
	13.2 effect of irradiation on foods	
Week 14	Unit-XIV 14.1 Food packaging characteristics & material	
	14.2 flexible and rigid plastic	
Week 15	Unit- XV 15.1 protective packaging in tropical environment 15.2 Food labelling	
Week 16	Unit-XVI 16.1 use of chemical preservatives in the food industry	
	16.2 benefits and potential health risks of chemical preservatives.	
PRACTICAL		
Course Content		
Week 1	Preparatory operation in food processing and preservation	
Week 2	Canning of selected fruits & vegetables	
Week 3	Freezing of Foods	
Week 4	Dehydration of fruits & vegetables	

Week 5	Preparation of fermented food product (bread)	
Week 6	Preparation of fermented food product (vinegar)	
Week 7	Preparation of fermented food product (Pickles)	
Week 8	Preparation of fermented food product (yogurt)	
Week 9	Preparation of Ketchup	
Week 10	Preparation of Jam	
Week 11	Peach preserve & Carrot Preserve	
Week 12	Mango preserve	
Week 13	Preparation of synthetic syrup	
Week 14	Pickling in vinegar	
Week 15	Blanching of fruits and vegetables	
Week 16	Plum chutney	

Textbooks and Reading Material

1. Awan, J.A. (2011). Food processing and preservation. Unitech Communications, Faisalabad, Pakistan.
2. Awan, J.A. & Rehman, S.U. (2011). Food Preservation Manual. Unitech Communications, Faisalabad, Pakistan.
3. Heldman, D. (2011). Food Preservation Process Design. Elsevier Corporation, USA.
4. Rahman, M.S. (2007). Handbook of Food Preservation. CRC Press, Taylor & Francis Group, Boca Raton, Florida, USA.

Teaching Learning Strategies

1. Lectures
2. Discussions
3. Presentations
4. Quiz
5. Assignments

Assignments: Types and Number with Calendar

1. Innovations in Food Preservation: Emerging Technologies and Their Applications
2. Research and report on the impact of different thermal processing methods on the nutritional quality of food.

Sr. No.	Elements	Weightage	Details
1.	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	25%	Continuous assessment includes: Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.
3.	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.