

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



Programme	B.Sc. (Hons.) Food Science & Technology	Course Code	FST-205	Credit Hours	3(2-1)
Course Title	CEREAL TECHNOLOGY				
Course Introduction					
<p>This course will provide:</p> <ol style="list-style-type: none"> 1. Basic knowledge of cereal grains and cereal industry. 2. Basic concepts concerning milling and processing of different cereal grains into products. 3. Practical knowledge of grain and flour quality assessment. 					
Learning Outcomes					
<p>On the completion of the course, the students will:</p> <ol style="list-style-type: none"> 1. Demonstrate importance, production and grading criteria of cereal based foods. 2. Apply storage principles and allied determinants associated with the storage of dietary cereals. 3. Elaborate the concepts of product development from cereal based ingredients. 					
Course Content				Assignments/Readings	
Week 1	Unit-I				
	1.1	Importance			
	1.2	Production			
Week 2	UnitII				
	2.1	Structure			
	2.2	Composition			
Week 3	Unit-III				
	3.1	Nutrition			
	3.2	Methods			
Week 4	Unit-IV				
	4.1	Types			
	Unit- IV				
	4.2	Role of temperature and moisture			

Week 5	Unit-V 5.1 Safe storage methods	
	Unit-V 5.2 Cleaning	
Week 6	Unit- VI 6.1 Tempering	
	6.1 Conditioning	
Week 7	Unit-VII 7.1 Types of grinding machines	
	7.2 Principles	
Week 8	Unit-VIII 8.1 Types of sifters	
	8.2 Flour Treatment and Quality	
Week 9	UNIT- IX 9.1 Rheology of doughs	
	9.2 Rheology of batters	
Week 10	Unit-X 10.1 Production of Starch	
	10.2 Production of oil	
Week 11	Unit-X1 11.1 Production of protein	
	11.2 Drying	
Week 12	Unit-X11 12.1 Milling	
	12.2 Parboiling	
Week 13	Unit-X111 13.1 Processing of rice	
	13.2 Processing of Oats	
Week 14	Unit-X1V 14.1 Malting	

	14.2 Brewing	
Week 15	Unit-XV	
	15.1 Production of breakfast cereals	
	15.2 Production of snack foods	
Week 16	Unit-XVI	
	16.1 Feed uses of cereals	
	16.2 Industrial uses if cereals	
PRACTICAL		
Week 1	1. Grading of grains 1.1 Milling of cereal grain through different mills	
Week 2	2. Grading of grains 2.1 Milling of cereal grain through different mills	
Week 3	3. Grading of grains 3.1 Milling of cereal grain through different mills	
Week 4	4. Grading of grains 4.1 Milling of cereal grain through different mills	
Week 5	5. Grading of grains 5.1 Milling of cereal grain through different mills	
Week 6	6. Grading of grains 6.1 Milling of cereal grain through different mills	
Week 7	7. Tests for flour quality assessment	
Week 8	8. Tests for flour quality assessment	
Week 9	9. Tests for flour quality assessment	
Week 10	10. Tests for flour quality assessment	
Week 11	11. Tests for flour quality assessment	

Week 12	12. Visit to wheat, maize and rice processing industries	
Week 13	13. Visit to wheat, maize and rice processing industries	
Week 14	14. Visit to wheat, maize and rice processing industries	
Week 15	15. Visit to wheat, maize and rice processing industries	
Week 16	16. Visit to wheat, maize and rice processing industries	

Textbooks and Reading Material

Recommended Books

1. Kent, N.L. & Evers, A.D. (2018). Kent's Technology of Cereals: An Introduction for Students of Food Science and Agriculture. (5th ed.). Pergamon Press, Oxford, England.
2. Delcour, J.A. & Hosney, R.C. (2010). Principles of Cereal Science and Technology. American Association of Cereal Chemists Inc, St. Paul, Minnesota, USA.
3. Karel, K. & Joseph, G.P. (2000). Handbook of Cereal Science and Technology. Marcel Dekker, New York, USA.

Teaching Learning Strategies

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

Assignments: Types and Number with Calendar

1. Food Processing Industries in Pakistan
2. Fundamentals of Nutrition
3. Hidden hunger solutions

Assessment

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.