



Course Syllabus
Gyanmanjari Science College
Semester- 3(M.Sc.)

Subject: Technology for cereals, legumes and oilseed products -MSCFT13513

Type of course: Major

Prerequisite: Student must have comprehensive understanding of Food Processing and Preservation Technology

Rationale: This course empowers students with essential knowledge and practical skills for effective processing and preservation of fruits and vegetables, addressing industry needs and emerging technologies.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
CI	T	P	C	Theory Marks		Practical Marks		CA	
				ESE	MSE	V	P	ALA	
4	0	0	4	60	30	10	00	50	150

Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.

Course Content:

Unit No	Course content	Hrs	% Weightage
1	Introduction to Food Grains and Legume Processing: Production trends, structure and chemical composition of cereals, pulses and oilseeds. Supply chain of food grains, physicochemical properties of food grains. Pretreatment of pulses for milling, Methods of milling of pulses, Factors affecting milling of pulses, Pulse based processed products	15	25%



2	Oilseeds Processing for Oil Extraction: Preparation of oilseeds, Mechanical and Solvent extraction methods of oil extraction, Oil refining, hydrogenation, Utilization of deoiled cake.	15	25%
3	Processing of Wheat: Wheat classification, Structure of wheat grain, Wheat milling- basic concepts, products and by-products, Flour milling, Turbo grinding and air-classification, Flour grades and their suitability for baking purposes.	15	25%
4	Paddy milling: Milling of Paddy- basic concepts, traditional and modern methods of milling, Parboiling techniques. Corn milling: Dry and wet milling of corn, corn starch and its conversion products.	15	15%

Continuous Assessment:

Sr. No	Active Learning Activities	Marks
1	Interactive Milling Plant Layout (Digital/Model): Student will develop a digital or physical layout of a milling or oil extraction plant, highlighting "flow of raw materials to finished products. Upload photos/video on GMIU web portal.	10
2	Pulse-Based Snack Innovation: Develop a ready-to-eat or ready-to-cook product using pulses (e.g., protein snacks, instant dal mixes), and submit complete product profile with product photos on GMIU web portal.	10
3	Photo Essay: Traditional Food Grain Processing: Capture and explain local/traditional methods of food grain or legume processing in rural areas. Submit as a photo essay or poster presentation on GMIU web portal.	10
4	Sustainability Report on Milling By-products: Student will analyze the industry data and write a report on innovative uses of bran, husk, or deoiled cake. Include examples of commercialization and submit PDF on GMIU web portal.	10
5	Mini Review: Food Laws & Standards in Grain/Oil Processing: Write a 2-page review on FSSAI, AGMARK, or Codex guidelines applicable to processed grains or oils. Include labeling and quality norms and submit PDF on GMIU web portal.	10
Total		50



Suggested Specification table with Marks (Theory):60

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	20%	30%	30%	10%	-	10%

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcome:

After learning the course the students should be able to:	
CO1	Identify the structure and composition of cereals, pulses, and oilseeds; explain milling methods and pulse-based products.
CO2	Explain the preparation and processing of oilseeds; distinguish between oil extraction and refining techniques.
CO3	Classify wheat types; describe milling techniques and relate flour grades to baking applications.
CO4	Compare traditional and modern paddy milling; outline corn dry/wet milling and starch conversion.

Instructional Method: The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

Reference Books:

- [1]. Corn: Chemistry and Technology by Watson SA & Ramstad PE., AACC
- [2]. Unit Operations of Agricultural Processing by K.M. Singh and K.K. Sahay.
- [3]. Manuals on Rice and its processing by CFTRI Mysore and IIT Kharagpur.
- [4]. Cereal Technology by Potter NN. AVI Publication.
- [5]. Post harvest technology of Cereals, Pulses and Oilseeds by Chakravarti A. Oxford Publishing

