



GUJARAT TECHNOLOGICAL UNIVERSITY

BACHELOR OF ENGINEERING

Subject Code : 3165104

Subject Name : Grain Engineering and Technology

WEF Academic Year :	2022-23
Semester :	6
Category of the Course :	Professional Elective-II

Prerequisite: Nil

Rationale: This subject is aimed at imparting knowledge and skills related to the processing techniques, value addition, and handling of processing equipment of cereals, pulses and oil seeds to the students, as the understanding of these aspects is essential for the students to perform efficiently and effectively in the industry.

Course Scheme:

Teaching Scheme			Total Credits	Assessment Pattern and Marks				Total Marks
L	T	PR	C	Theory		Practical		
				ESE (E)	PA(M)	ESE (V)	PA (I)	
3	0	2	4	70	30	30	20	150

Course Content:

Sr. No.	Course Content	No. of Hours	% of Weightage
1	Properties of Food Grains: Supply chain of food grains, Hydrothermal treatment of Grains, physico-thermal properties, biochemical properties, physico-chemical properties, Effect of different factors on various properties.	4	10
2	Rice: Parboiling and milling of paddy, Aging of rice, Rice enrichment, Prozesse drice products	14	20
3	Wheat: Wheat and its quality characteristics for milling into flour and semolina, Flour milling, Turbo grinding and air classification, Flour grades and their suitability for baking purposes, Assessment of flour quality and characteristics.	10	20
4	Corn and Other cereals: Dry and wet milling of corn, corn starch and its conversion products, Malting of Barley, Milling of millets.	6	15
5	Milling of Pulses: Traditional milling, Commercial milling and Modern methods of milling. Factors affecting milling of pulses, Pulse based extruded products	8	15



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6	Processing of Oilseeds: Pre treatment, Oil extraction methods, Processing of extracted oil: Refining, Hydrogenation; Processing of de oiled cake: Protein rich products, Soybean processing	8	20
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Reference Book:

1. Post harvest technology of Cereals, Pulses and Oilseeds by Chakravarti A. Oxford Publishing.
2. Cereal Technology by Potter NN.AVI Publication.
3. Unit Operations of Agricultural Processing by K.M.Singhand K.K.Sahay
4. Bakery Science & Cereal Technology by Neelam Khatar Paul, Rajbala Grewal & Sudesh Jood (Daya publishing house).
5. Bakery Technology and Engineering by MatzSA.CBS Publication.
6. Manual son Rice and its processing by CFTRIMysore and IITKharagpur

Suggested Course Practical List:

- To study the physical properties of paddy
- To study the physical properties of rice
- To study the cooking quality of rice using water uptakes method.
- To prepare sprouted or germinated pulses or beans
- To prepare boiled paddy by pressure boiling method
- Determination of Angle of Repose of grains
- Preparation of quick cooked rice
- To study the methods of extraction of oil from oil seeds
- Determination of slipping point of fat
- Determination of undermilled grains from polished rice

List of Laboratory/Learning Resources Required:

Equipment:

- Grain dryer
- Specific gravity separator
- Cyclone separator
- Sieve shaker
- Water bath
- Angle of repose equipment
- Mini oil expeller



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- Mini dal mill

List of Open Source Software/learning website:

- www.iicpt.edu.in
- sch.vscht.cz/materialy/erasmus/CCHT2Eng1-Hr-2010.pdf
- www.cftri.com/milling.html
- www.grains.k-state.edu
- www.grainmilling.org.za/miller.html

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