



# GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Engineering

Level: UG

Branch: Food Engineering & Technology

Subject Code: 3175104

Subject Name : Storage Engineering and Handling of Agricultural Products

WEF Academic Year :	2022-23
Semester :	7
Category of the Course :	Professional Core

**Prerequisite:Nil**

**Rationale:** This subject focuses on the principles and technologies of storage, preservation, and handling of agricultural products to minimize losses, ensure quality, and improve shelf life. It prepares students to optimize storage systems and handling techniques in line with industry standards for efficient post-harvest management.

**Course Scheme:**

Teaching Scheme			Total Credits	Assessment Pattern and Marks				Total Marks
L	T	P		Theory		Practical		
			ESE (E)	PA(M)	ESE (V)	PA (I)		
4	0	2	5	70	30	30	20	150

**Course Content:**

Sr. No.	Course Content	No. of Hours	% of Weightage
1	Unit I Storage of grains, biochemical changes during storage, production, distribution and storage capacity estimate models, storage capacity models, ecology, storage factors affecting losses, storage requirements	5	25
2	Unit II Bag and bulk storage, godowns, bins and silos, rat proof godowns and rodent control, method of stacking, preventive method, bio-engineering properties of stored products, function, structural and thermal design of structures, aeration system.	8	25
3	Unit III Grain markets, cold storage, controlled and modified atmosphere storage, effects of nitrogen, oxygen, and carbon dioxide on storage of durable and perishable commodities, 43 irradiation, storage of dehydrated products, food spoilage and preservation, BIS standards.	11	25
4	Unit IV Physical factors influencing flow characteristics, mechanics of bulk solids, flow through hoppers, openings and ducts; design of belt, chain, screw, roller, pneumatic conveyors and bucket elevators, principles of fluidization, recent	10	25



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advances in handling of food materials.		
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## Reference Book:

- Boumans. 1985. Grain Handling and Storage. Elsevier.
- FAO. 1984. Design and Operation of Cold Stores in Developing Countries. FAO.
- Golob. 2002. Crop Post-Harvest: Science and Technology. Vol 1 Wiley-blackwell.
- Hall CW. 1970. Handling and Storage of Food Grains in Tropical and Sub-Tropical Areas. FAO Publisher Oxford & IBH.
- Henderson S and Perry SM. 1976. Agricultural Process Engineering. 5th Ed. AVI Publisher.
- Hodges 2004. Crop Post-Harvest: Science and Technology. Vol 2, Wiley-blackwell.
- Ripp BE. 1984. Controlled Atmosphere and Fumigation in Grain Storage. Elsevier.
- Shefelt RL and Prussi SE. 1992. Post Harvest Handling – A System Approach. Academic Press.
- Vijayaraghavan S 1993. Grain Storage Engineering and Technology. Batra Book Service.

## Suggested Course Practical List:

- Study of Physical factors influencing flow characteristics, mechanics of bulk solids,
- Study of flow through hoppers, openings and ducts,
- Design of belt conveyor,
- Design of chain conveyor,
- Design of screw conveyor,
- Design of roller conveyor,
- Design of pneumatic conveyors and
- Design of bucket elevators;
- Study the principles of fluidization;
- Study of recent advances in handling of food materials

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