

GUJARAT TECHNOLOGICAL UNIVERSITY
Food Processing & Technology
B. E. SEMESTER: VI

Subject Name: **Food Engineering Operations-II**

Subject Code: **161403**

Teaching Scheme				Evaluation Scheme		
Theory	Tutorial	Practical	Total	University Exam (Theory) (E)	Mid Sem Exam (Theory) (M)	Practical (I)
4	0	2	6	70	30	50

Sr. No	Course Content	Total Hrs.
1.	Pasteurization and Sterilization: Introduction, Holding Method, High Temperature Short Time Pasteurizes, Bottle Sterilization, UHT Processing, Direct Heating (Injection System Type), Fouling of Heat Exchanger and De-scaling.	08
2.	Centrifugation and Homogenization: Homogenization, Technical Execution, Efficiency of Homogenization, Operation and Maintenance, Centrifugation, Stokes Law Clarifiers and Separators, Centrifugal Separators, Efficiency of Separation, Flow Rate, Power Requirement, Strength of Bowl, Construction of Separator, Bactofuge Treatment Exercises, Tri-process machines, Homogenizers.	10
3.	Distillation: Introduction, Flash distillation, Continuous distillation with reflux, Distillation in packed column, Batch distillation, Multi component distillation.	07
4.	Leaching and Extraction: Principle of leaching and its equipment, Principle of extraction and its equipment, Special extraction techniques.	07
5.	Crystallization: Crystal geometry, Equilibria and yields, Nucleation, Crystal growth, Crystallization equipments, Crystallization from melts.	07

6.	Filteration: Centrifugal filters, Filter media, Filter aids, Principle of cake filtration, clarifying filters, cross flow filtration, gravity sedimentation process, centrifugal sedimentation process, Bag filters, pressure drop in duplex filters and filter materials.	07
7.	Freezers And Freeze Drying: Ice Cream Freezer, batch freezer and continuous Freezer, Ammonia and Freon Freezers, operation and trouble shooting, Material of construction, Booster pumps.	07

Reference Books:

1. Unit operations of chemical engineering by McCabe and Smith. McGraw-Hill
2. Chemical engineering handbook by Perry RH. McGraw-Hill
3. Dairy plant engineering and management by Tufail Ahmad, Kitab Mahal Publications
4. Engineering for dairy and food product by Farrall AW. John Wiley and Sons
5. Milk Pasteurization by Hall CW. The AVI Publication
6. Introduction to Chemical Engineering By Salil K Ghosal, Shyamal K Sanyal, Siddhartha Datta, Tata Mcgraw Hill