

# GUJARAT TECHNOLOGICAL UNIVERSITY

## B. E. SEMESTER: V CHEMICAL ENGINEERING

Subject Name: **Fundamentals of Chemical Engineering Unit Operations**  
(Institute Elective - II)

Subject Code: **150505**

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

Sr. No.	Course content
1.	<b>Introduction:</b> Definition & types of Unit operations.
2.	<b>Fluid Flow Operation:</b> Types of fluids, Continuity equation, Bernoulli's equation, Various types of Pumps, Flow meters & valves, Piping.
3.	<b>Mechanical Operation:</b> Size reduction equipments, Filters, Centrifuges, Cyclones, Thickeners.
4.	<b>Heat Transfer Operation:</b> Mode of heat transfer, Definition of conduction, Convection & radiation, Condensation & boiling, Shell & tube heat exchanger & Evaporators.
5.	<b>Mass Transfer Operations:</b> Introduction of mass transfer operations like distillation, Extraction, absorption, Drying, Humidification, Crystallization, Mass transfer equipments like cooling towers, Tray drier and distillation column.

### Practical and Term Work:

Experiments based on the above topics for the testing & identification should be given to the students.

## **Reference Books:**

1. Unit Operations of Chemical Engg. By W.L. McCabe, J. C. Smith & Harriott, 6<sup>th</sup> Edition Mc-Graw Hill International.
2. "Chemical Engineering", Volume-1 & 2, 4<sup>th</sup> edition by Coulson & Richardson.
3. Unit Operation by Brown & Associates.
4. Perry's Chemical Engineers handbook, 7<sup>th</sup> edition by Perry & Green, Mc-Graw Hill international.