

UG Department: **Chemical Engineering**
Course Code: **CH301** Course Name: **Mass Transfer-II**
Credit: **4** L-T-P: **3-1-0**
Version: **1** Approved on:
Prerequisite Course: **Mass Transfer-I**

Fundamentals of Mass Transfer: Molecular diffusion, fluxes and measurement of diffusivities, Equation of continuity and application to diffusion in fluid and solid systems (stagnant film, equimolar, counter, unsteady state etc.).

Convective Mass Transfer: Mass transfer coefficients, Laminar and turbulent flow situations and correlations.

Interphase Mass Transfer: Two film theory and overall mass transfer coefficients, Penetration and surface renewal theories

Continuous Contacting Operations: Gas absorption - countercurrent isothermal, HETP, design equation, (L/G) min, NTU, HTU calculation of NTU, nonisothermal absorption, co-current operation, similarity of other steady operations to gas absorption (i.e. packed tower distillation, moving bed adsorbers).

Design of Continuous Contacting Equipment: Flooding, ΔP , Liquid and gas distributors, entrainment eliminators.

Estimating Stage Efficiencies: AIChE methods, application to stage design.

Simultaneous Heat and Mass Transfer: Humidification and dehumidification, Cooling towers, Drying theory and design, Crystallization.

Introduction to Membrane Separation Processes.

Books

1. Treybal, R. E., "*Mass Transfer Operations*," 3rd ed., McGraw Hill, Singapore.
2. Geankoplis, C. J., "*Transport Processes and Unit Operations*," 3rd ed., PHI, New Delhi, 2000.
3. King, C. J., "*Separation Processes*," 2nd ed., Tata McGraw Hill, New Delhi, 1982.
4. Skelland, A. H. P. "*Diffusional Mass Transfer*," John Wiley, NY.