

UCH602 MASS TRANSFER-II

L	T	P	Cr
3	1	3	5.0

Distillation: Vapor-liquid equilibrium data for binary mixtures, Principles of distillation, Flash distillation, differential distillation, Steam distillation, McCabe-Thiele method, Ponchon-Savarit method, Number of plates, Multiple feed, Intermediate product withdrawal, Plate efficiency, Bubble cap, Sieve plate, Valve tray, Distillation in a packed columns, Principles of azeotropic and extractive distillation, Bubble point and dew point calculation of multi-component system, Introduction to multi-component distillation, Reactive distillation, Divided wall distillation.

Liquid-Liquid Extraction: Equilibrium relationship for partially miscible and immiscible systems, Selectivity and choice of solvent, Determination of number of equilibrium stages by graphical methods, Extraction with intermediate feed and reflux, Extraction efficiency, Different types of extraction equipment,

Adsorption: Adsorption Equilibria, Batch and continuous adsorption, Selection of adsorbent, Determination of specific surface area of an adsorbent, Break-through curve, Introduction to ion-exchange processes, Adsorption equipments.

Solid-Liquid Extraction: Classification of solid liquid extraction systems, Solid liquid extraction equilibria, Determination of number of equilibrium stages by graphical methods, Solid liquid contacting equipment.

Laboratory work: Experiments on steam distillation, Solid-liquid extraction, Adsorption, Humidification, Diffusion and mass transfer coefficients, Verification of Rayleigh equation, Drying, Wetted wall column, Absorption in packed bed, Bubble cap distillation column, Crystallization.

Text Books:

1. Treybal, R.E., Mass Transfer Operations, McGraw Hill (1980).
2. Geankoplis, Transport Processes and Unit Operations, Prentice-Hall of India (1993).

Reference Books:

1. Sherwood, T.K., Pigford, R.L., and Wilkes, C.R, Mass Transfer, McGraw Hill (1975).
2. Dutta, B. K Mass Transfer and separation process, Prentice Hall Of India, (2007).
3. McCabe, W.L., and Smith, J.C., Unit Operations of Chemical Engineering, McGraw Hill (1993).
4. Skelland, A.H.P., Diffusional Mass Transfer, John Wiley & Sons (1985).