

5th Semester	RCH5C001	Mass Transfer-II	L-T-P 3-0-0	3 Credits
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Module I: (12 hr)

Liquid-liquid operations: Extraction: Introduction, liquid-liquid equilibrium, analytical and graphical solutions for single and multistage operations, continuous counter-current operation without and with reflux, fractional extraction, equipment for liquid contacting operations, single stage, multistage and continuous contacting equipment.

Module II: (12 hr)

Leaching: Steady and unsteady state operations, equipments, analytical methods for single and multistage operations.

Module III: (8 hr)

Drying: Equilibrium, drying rate curve, batch and continuous drying, time of drying and calculations, mechanism of batch drying, equipments for batch and continuous drying operations, design of dryers.

Module IV: (10 hr)

Adsorption: Theory of adsorption, Industrial adsorbents, adsorption equilibrium – isotherms and isobars, Freundlich isotherm, single and multistage operations, Ion-Exchange.

Books:

1. Mass Transfer Operations by R E Treybal, McGraw Hill.
2. Principles of Mass Transfer and Separation Processes by B K Dutta, PHI.
3. Unit Operations of Chemical Engineering, 7th ed. by W L McCabe, J C Smith, and P Harriott, McGraw-Hill.
4. Design of Equilibrium Stage Processes by B D Smith, McGraw-Hill.
5. Mass Transfer Operations by A Suryanarayana, New Age International.

Digital learning resources:

1. Mass transfer by Prof. Nishith Verma, Department of Chemical Engineering, IIT Kanpur, Link: <https://nptel.ac.in/courses/103/104/103104046/>