Novel Separation Processes - Web course

COURSE OUTLINE

Fundamentals of Separation Processes; Basic definitions of relevant terms.

Membrane based separation processes; fundamentals and various terms; classifications; Design aspects: various models and their applicabilities.

External field induced membrane separation processes for colloidal particles; fundamentals of various colloid separation; derivation of profile of electric field strength; coupling with membrane separation and electrophoresis.

Gas separation; Surfactant based separation processes.

Liquid membranes:

1. Fundamentals and modeling.
2. Micellar enhanced separation processes.
3. Cloud point extraction;Centrifugal Separation processes and their calculations.
4. Ion exchange and chromatographic separation processes.
5. Supercritical fluid extraction.

COURSE DETAIL

S.No	Topics	No. of Hours
1	Fundamentals of Separation Processes.	1
2	Basic definitions of relevant terms.	1
3	Membrane based separation processes: 1. Fundamentals and various terms. 2. Classifications. 3. Design aspects: various models and their applicabilities.	20
4	External field induced membrane separation processes for colloidal particles: 1. Fundamentals of various colloid separation. 2. Derivation of profile of electric field strength. 3. Coupling with membrane separation and electrophoresis.	6

NP-TEL

NPTEL

http://nptel.iitm.ac.in

Chemical Engineering

Pre-requisites:

CH 20001 (Fluid Flow).

Hyperlinks:

1. www.ees.elsevier/seppur
2. www.ees.elsevier/memsci

Coordinators:

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5	Gas separation.	2
6	Surfactant based separation processes: 1. Liquid membranes: fundamentals and modeling. 2. Micellar enhanced separation processes. 3. Cloud point extraction.	4
7	Centrifugal Separation processes and their calculations.	2
8	Ion exchange and chromatographic separation processes.	2
9	Supercritical fluid extraction.	2
	Total	40

References:

1. Handbook of Separation Process Technology by R W Rousseau (John Wiley & Sons).
2. Supercritical Fluid Extraction by M A Mchugh & V J Krukonis (Butterworth Heinmann).
3. Large Scale Adsorption & Chromatography by W C Wankat (CRC Press Inc).
4. Advanced Membrane Technology and Applications by N N Li (Wiley).