CH481: ADVANCED SEPARATION TECHNIQUES

CREDITS = 4 (L = 4, T=0, P = 0)

1.	**RATE GOVERNED PROCESSES:** definitions and terminologies; Membrane separation processes, preparation and characterization of membranes.	4 Hours
2.	Principles of reverse osmosis, nanofiltration, ultrafiltration, microfiltration. Detailed design and modeling: Design of membrane/process modules; Basic principles and modeling of dialysis; Liquid membrane and its modeling. Basic design of gas separation and pervaporation, Facilitate Transport	20 Hours
3.	**ELECTRIC FIELD ENHANCED SEPARATION PROCESSES:** zeta potential, electric double layer; Basic modeling of electric field enhanced filtration.	2 Hours
4.	**THERMAL DIFFUSION:** Fundamental and Phenomenological theories, thermo gravitational columns, sublimation Technologies, Simple Vacuum and entrainer sublimation. Fractional sublimation, Pressure swing adsorption, Molecular Sieve.	4 Hours
4.	**FOAM SEPARATION:** Theories and applications continuous multistage processes. Foam stabilities.	4 Hours
5.	**SUPER CRITICAL FLUID TECHNOLOGIES-THEORIES AND APPLICATIONS:** Supercritical Extraction. Zone refining, Chromatographic separation.	6 Hours

REFERENCE BOOKS

Title: Rate governed separation
Author: P C Wankat
Publisher: Elsevier.

Title: Chemical Engineering Handbook
Author: Perry
Publisher: Tata-McGraw Hill