VEER SURENDRA SAI UNIVRSITY OF TECNOLOGY, BURLA

Lesson plan

Semester: 8th

Subject: Modern Separation Process in Chemical Engineering

Lecture	Module	Topic
1	1	An overview of separation techniques
2	1	Separation from liquids
3	1	Separation from liquids
4	1	Separation of gasses
5	1	Separation of gasses
6	1	Vapors Separation from solids
7	1	Vapors separation from solids
8	1	Surfactant mediated waste water treatment techniques
9	1	Other waste water treatment techniques
10	1	Aqueous two-phase separation
11	1	Reverse micelle extraction
12	2	Definition of a membrane and membrane process
13	2	Microfiltration,
14	2	Reverse osmosis
15	2	Ultrafiltration
16	2	Dialysis, electro-dialysis
17	2	Gas permeation &pervaoration
18	2	Characterization of membrane
19	2	Membrane modules such as plate and frame device, spiral wound, tubular

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		and hollow-fiber
20	2	Permeability and permeselectivity
21	2	Biotechnology and in food and biochemical industry;
22	2	Ion Exchange: Ion exchange mechanism, ion exchange media
23	2	Equipment and design procedure and industrial applications
24	3	Adsorption as a separation process:
25	3	Thermodynamics of adsorption: basic relationship, Representation
26	3	Prediction of single component adsorption
27	3	Multi-component adsorption equilibrium calculation
28	3	Isotherm expression of gas adsorption
29	3	Adsorption with chemical reaction
30	3	Adsorption with biological growth
31	3	Problems on adsorption
32	4	Fundamentals of HPLC, Chromatographic column,
33	4	Development of gradient-elution separations.
34	4	Basic principles of capillary electro chromatography
35	4	Mobile phase composition
36	4	Stationery phases used in CEC
37	4	Solid separation processes
38	4	Physical properties of solids, classification of powders
39	4	Particle size distributions particle density, bulk density, porosity

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