

Process Intensification

CHE- 448	Process Intensification	2CH	
		Theory (2)	
Pre- req.	Nil	Category	Elective
Course Contents as per PEC Guidelines 2023-2024			
Introduction to process intensification and its benefits Techniques for process intensification in Chemical Engineering Process intensification in heat exchangers: (a) Multi- stream heat exchanger, (b) Compact heat exchanger Process intensification in reactors: (a) Spinning disc reactor, (b) Rotary packed-bed reactor, (c) Oscillatory baffled reactor, (d) Micro-reactor Process intensification in distillation columns: (a) Divided-wall column. (b) Petlyuk column, (c) Heat- integrated distillation column, (d) Cyclic distillation			

Week /Lecture	Topic
1-2	Introduction to process intensification and its benefits
3-5	Techniques for process intensification in Chemical Engineering
6-8	Process intensification in heat exchangers: (a) multi-stream heat exchangers, (b) Compact heat exchanger
9	MID TERM EXAM
10-12	Process intensification in reactors: (a) Spinning disc reactor, (b) Rotary packed-bed reactor, (c) Oscillatory baffled reactor, (d) Micro-reactor
13-16	Process intensification in distillation columns: (a) Divided-wall column. (b) Petlyuk column, (c) Heat-integrated distillation column, (d) Cyclic distillation
17	Revision
18	End Semester Exam
TEXT AND REFERENCE BOOKS: - Kiss, A. A., Advanced Distillation Technologies: Design, Control, and Applications. JohnWiley & Sons, 2013. - Reay,D.;Ramshaw, C.;Harvey, A., Process Intensification: Engineering for Efficiency, Sustainability, and Flexibility. 2nd Edition; Butterworth-Heinemann,2013. - Segovia-Hernández, J. G.; Bonilla-Patriciolet, A., Process Intensification in Chemical Engineering: Design, Optimization and Control.Springer,2016. - Stankiewicz, A.; Moulijn,J.A., Re-engineering the Chemical Processing Plant: Process Intensification. CRC Press,2003. - Stankiewicz, A.; van Gerven, T; Stefanidis, G., The Fundamentals of Process Intensification. John Wiley & Sons,2015.	

