

1.	Title of the course	Transport Phenomena
2.	Course number	CH312L
3.	Structure of credits (L-T-P-C)	2-1-0-3
4.	New course/modification to	Modified with CH303L/TRANSPORT PHENOMENA
5.	To be offered by	Chemical Engineering
6.	Proposed by	Nallamilli Trivikram Reddy
7.	Prerequisite	None
8.	Course Objective(s): To discuss the mathematical and conceptual analogies between momentum, heat and mass transport with examples.	
9.	Course Content: Review of momentum, heat and mass transfer; Derivation of governing equations for transport phenomena using shell balance method in cartesian coordinates; Generalization to cylindrical and spherical coordinates; Analogies in transport phenomena; Flow over an inclined plane; Stratified Couette flow; Flow past a suddenly moving plate: analogy to transient heat and mass transfer in semi-infinite medium; Non-isothermal falling film; Viscous heating; Free convection between two parallel plates; Steady mass transfer from a sphere; Mass transfer into a falling liquid film; Mass transfer with heterogeneous reaction in a catalyst pore.	
10.	Textbook(s): 1. Welty J, Wicks C E, Wilson R E and Rorrer G L, Fundamentals of Momentum, Heat and Mass Transfer, 5th Edition, Wiley India (2010). 2. Kumaran V, Fundamentals of Transport Processes with Applications, Cambridge IISc Series (2022).	
11.	Reference(s): 1. Geankoplis C J, Hersel A A and Lepek D H, Transport Processes and Separation Process Principles, 5th Edition, Prentice Hall (2018). 2. Thamida S K, Transport Phenomena: Chemical Processes, Studium Press (2016). 3. Bird R B, Stewart W E and Lightfoot E N, Transport Phenomena, 2nd Edition, Wiley India (2006).	