1.	Title of the course	Transport Phenomena
2.	Course number	CH3105
3.	Status of the course	Core
4.	Structure of credits	2-1-0-3
5.	Offered to	UG
6.	New course/modification to	New course
7.	To be offered by	Department of Chemical Engineering
8.	To take effect from	July 2021
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	**Course Objective(s):** To identify the transport properties and solve flow, heat, mass transfer problems in coupled form for simple geometries. To identify the analogies in correlations for dimensionless quantities in flow, heat and mass transfer phenomena.	
12.	**Course Content:** Mechanism of momentum transfer in fluids; Newton's law of viscosity; Equation of motion and its solution under steady and unsteady state conditions; Correlations for friction factor; Mechanism of heat transfer; Fourier's law of heat conduction; Energy balance equation and its solution under steady and unsteady state conditions; Mechanism of mass transfer; Fick's law of diffusion; Species balance equation and its solution for binary mixtures under steady and unsteady state conditions; Analogies relating friction factor and Reynolds, Nusselt, Prandtl, Sherwood and Schmidt numbers; Simultaneous momentum, heat and mass transfer; Viscous heating; Tubular reactor with exothermic or endothermic reactions; Packed bed reactors.	
13.	**Textbook(s):** 1. Bird R B, Stewart W E and Lightfoot E N, *Transport Phenomena*, 2nd Edition, Wiley India (2006). 2. Welty J, Wicks C E, Wilson R E and Rorrer G L, *Fundamentals of Momentum, Heat and Mass Transfer*, 5th Edition, Wiley India (2010).	
14.	**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*, 1st Edition, Studium Press India (2016). 3. Thomson W J, *Introduction to Transport Phenomena*, 1st Edition, Pearson Education (2001).	