

<b>6<sup>th</sup> Semester</b>		<b>Transport Phenomena</b>	<b>L-T-P 3-0-0</b>	<b>3 CREDITS</b>
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**Module I: (12 Hrs)**

Momentum Transport: Viscosity and the mechanism of momentum transport, Shell momentum balances and Velocity distributions in laminar flow. The equation of changes for Isothermal systems. Velocity distributions with more than one independent variable. Inter phase transport in isothermal systems.

**Module II: (12 Hrs)**

Energy Transport: Thermal conductivity and mechanism of energy transport, shell energy balances and temperature distributions in solids and laminar flow, the equations of change for non - isothermal systems, temperature distribution with more than one independent variable, Inter phase transport in non-isothermal systems.

**Module III: (12 Hrs)**

Mass Transport: Diffusivity and the mechanism of mass transport, concentration distributions in solids and laminar flow, the equations of change for multi component systems. concentration distributions with more than one independent variable, inter phase transport in non-isothermal mixtures.

**Textbook:**

1. Transport Phenomena, 2nd ed. by R B Bird, W E Stewart, and E N Lightfoot, John Wiley & Sons.
2. Analysis of Transport Phenomena, William M. Deen, Oxford University Press

**Reference Books:**

1. Fundamentals of Momentum, Heat, and Mass Transfer, 5th ed. by J Welty, C E Wicks, and R E Wilson, and G L Rorrer, Wiley.
2. Introduction to Transport Phenomena: Momentum, Heat, and Mass by B Raj, PHI.

**Digital learning resources:**

1. Transport Phenomena by Prof. Sunando Dasgupta, Department of Chemical Engineering, IIT Kharagpur, Link: <https://nptel.ac.in/courses/103/105/103105128/>
2. Transport phenomena of nonnewtonian fluids by Prof. Nanda Kishore, Department of Chemical Engineering, IIT Guwahati, Link: <https://nptel.ac.in/courses/103/103/103103146/>