Indian Institute of Technology
Course Details Report

Course No: CH5030

Course Name: Transport Phenomena

Course Type:

Theory

Description:

- know the constitutive relationships in mass, momentum, and energy transport
- know the generalized equations for mass, momentum, and energy conservation
- recognize the transport phenomena involved in an engineering problem
- be able to apply the generalized equations for mass, momentum, and energy conservation for practical problems
- be able to mathematically represent the practical transport phenomena problems
- be able to solve one-dimensional transport phenomena problems

Course Content:

Phenomenological description of the continuum approach; transport properties; constitutive relations; conservation laws of mass, momentum, and energy; applications of the conservation laws; unidirectional flow problems; scaling analysis; irrotational flow; boundary layers; forced convection heat and mass transfer in confined and unconfined flows; introduction to transport in turbulent flows

Text Books:

William M Deen, 'Analysis of Transport Phenomena', New York, Oxford University Press.

Reference Books:

Byron, Bird, Warran E. Stewart and Edwin N. Lightfoot, `Transport Phenomena', New York, Wiley.