PROF. GANESH VISWANATHAN
Department of Chemical Engineering
IIT Bombay

TYPE OF COURSE : Rerun | Core | UG
COURSE DURATION : 12 weeks (24 Jan’ 22 - 15 Apr’ 22)
EXAM DATE : 24 Apr 2022

PRE-REQUISITES : Linear Algebra, Fluid mechanics
INTENDED AUDIENCE : Undergraduate and Graduate students from Chemical and Mechanical Engineering, College teachers, Process engineers
INDUSTRIES SUPPORT : Reliance, HPCL, BPCL, RCF, other chemical and petrochemical industries

COURSE OUTLINE :
Heat transfer occurs in many unit operations in variety of processes in chemical, petrochemical and pharmaceutical industries. Understanding the fundamentals governing heat transfer is key to designing equipment that involves heat exchange. This course for undergraduate students covers the fundamental aspects and quantitation of different modes of heat transport. The course can also serve as a refresher for graduate students.

ABOUT INSTRUCTOR:
Prof. Ganesh Viswanathan is an Associate Professor in Department of Chemical Engineering at Indian Institute of Technology Bombay, Mumbai. He completed his Ph.D in Chemical Engineering from University of Houston, Houston and Postdoctoral Fellowship at Mount Sinai School of Medicine, New York. He conducts research in systems biology of signaling networks and nonlinear dynamics of reactors.

COURSE PLAN :
Week 1: Introduction
Week 2: Resistances in radial systems
Week 3: Extended surfaces III– Varying cross-sectional area
Week 4: Introduction to Convective Heat Transfer
Week 5: Order of Magnitude Analysis
Week 6: Flow Past Flat Plate I – Method of Blasius
Week 7: Flow through Pipes III
Week 8: Introduction to Free/Natural Convection
Week 9: Condensation: Part 1
Week 10: Properties of a Blackbody
Week 11: View factor - Inside Sphere Method, Blackbody Radiation Exchange
Week 12: Introduction and Examples