

1.	Title of the course	Advanced Heat and Mass Transfer
2.	Course number	ME530L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To ME5037/21
6.	To be offered by	Department of Mechanical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	Course Objective(s): To introduce concepts related to the transport of heat and mass in thermal systems, and to discuss the exchange processes in depth.	
10.	Course Content: Review of heat transfer fundamentals, transient conduction and extended surface heat transfer; Review of steady, laminar and turbulent heat transfer in external and internal flows; Heat transfer at high speeds, unsteady, laminar and turbulent forced convection in ducts and on plates; Convection with body forces; Two phase flow correlations; Basics of radiation, radiation in enclosures, gas radiation; Diffusion and convective mass transfer; Combined heat and mass transfer; Numerical techniques to solve heat and mass transfer problems.	
11.	Textbook(s): 1. Modest M F, <i>Radiative Heat Transfer</i> , 3rd Edition, Academic Press (2013). 2. Kays W M and Crawford M E, <i>Convective Heat and Mass Transfer</i> , 3rd Edition, McGraw Hill, NYC (1993).	
12.	Reference(s): 1. Arpaci V S, <i>Conduction Heat Transfer</i> , 1st Edition, Pearson (1991). 2. Lienhard J H, <i>A Heat Transfer Textbook</i> , 2nd Edition, Prentice Hall (1987). 3. Mills A F, <i>Heat Transfer</i> , 1st Edition, Prentice Hall (1998).	