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 ME5039/21
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, *Radiative Heat Transfer*, 3rd Edition, Academic Press (2013). 2. Kays W M and Crawford M E, *Convective Heat and Mass Transfer*, 3rd Edition, McGraw Hill, NYC (1993).	
12.	**Reference(s):** 1. Arpaci V S, *Conduction Heat Transfer*, 1st Edition, Pearson (1991). 2. Lienhard J H, *A Heat Transfer Textbook*, 2nd Edition, Prentice Hall (1987). 3. Mills A F, *Heat Transfer*, 1st Edition, Prentice Hall (1998).	