

1.	Title of the course	Heat and Mass Transfer
2.	Course number	ME303M
3.	Structure of credits	3-1-2-5
4.	Offered to	UG
5.	New course/modification to	Modification To ME3101/8
6.	To be offered by	Department of Mechanical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	Course Objective(s): To Identify, formulate and solve problems for conduction, convection and radiation modes of heat transfer; To analyze, model heat conduction and radiation and be able to apply them for simple heat conduction problems; To analyze and apply empirical correlations in connection with the heat transfer at convection, boiling and condensation; To understand rudiments of mass transfer	
10.	Course Content: Introduction to different modes of heat transfer; Steady state conduction in one and two-dimensional systems; One-dimensional unsteady state conduction: analytical and numerical methods; Convection- basic equations, boundary layers, forced convection, external and internal flows, natural convection; Radiation heat transfer- basic laws, properties of the surfaces, view factors, gray-diffuse enclosures; Boiling and condensation; Analysis of heat exchangers; Mass Transfer Introduction, analogy between heat and mass transfer, mass diffusion, mass convection. Laboratory experiments: Linear and radial heat conduction, transient heat conduction, free and forced convection, thermal radiation, heat exchangers, thermal conductivity measurement, boiling and condensation.	
11.	Textbook(s): 1. Cengel Y A and Ghajar A J, <i>Heat and Mass Transfer: Fundamentals and applications</i> , 5th Edition, McGraw Hill (2014). 2. Incropera F P, Dewitt D P, Bergman T H and Lavine A S, <i>Principles of heat and mass transfer</i> , 7th Edition, Wiley (2016).	
12.	Reference(s): 1. Holman J P and Bhattacharyya S, <i>Heat Transfer</i> , 10th Edition, Wiley (2015).	