

BMEE402P	Heat and Mass Transfer Lab		L	T	P	C
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Pre-requisite	BMEE303L , BMEE303P		Syllabus version			
			1.0			
Course Objectives						
<ol style="list-style-type: none"> To impart a comprehensive knowledge of various modes of heat and mass transfer. To empower the students for solving heat transfer problems in the industry. To equip the student in the design of heat exchangers. 						
Course Outcomes						
At the end of the course, the student will be able to						
<ol style="list-style-type: none"> Conduct the experiments on different heat transfer modes Conduct the experiments on pin fin to assess its performance Understand the various pool boiling regimes Demonstrate the mass transfer mechanism 						
Indicative Experiments						
1.	Determination of the thermal conductivity of a given metal sample and comparison with tabulated values.					
2.	Determination of the thermal conductivity of a given liquid and comparison with tabulated values.					
3.	Heat conduction in spherical coordinate system.					
4.	Study of heat conduction by electrical analogy: experiment on a composite wall.					
5.	Determination of rate of heat transfer in natural convection from a cylinder 2 hours and comparison with theoretical calculations.					
6.	Determination of rate of heat transfer in forced convection from a heated pipe and comparison with theoretical calculations.					
7.	Prediction of temperature distribution and efficiency of a pin fin under forced and free convection and comparison with theoretical calculations.					
8.	Study of the regimes of pool boiling and determination of critical heat flux.					
9.	Determination of emissivity of a given surface.					
10.	Determination of Stefan-Boltzmann constant and comparison with reference value.					
11.	Demonstration of condenser, heat pipe and mass transfer apparatus.					
	Laboratory examinations (model and final)					
Total Laboratory Hours						30 hours
Text Books						
1.	Yunus A Cengel and Afshin J Ghajar, Heat and Mass Transfer: Fundamentals and Applications, 2015, 5 th edition, McGraw-Hill.					
2.	Sachdeva R C, Fundamentals of Engineering Heat and Mass Transfer, 2017, 5 th edition, New Age International.					
3.	Necati Ozisik M, Heat Transfer –A Basic Approach, 2016, McGraw Hill, New York.					
4.	Lab Manual prepared by course faculty					
Reference Books						
1.	Theodore L. Bergman, Adrienne S. Lavine, Frank P. Incropera, David P. DeWitt, Fundamentals of Heat and Mass Transfer, 2018, 8th edition, Wiley.					
2.	J P Holman and Souvik Bhattacharyya, Heat Transfer, 2016, 10 th edition, McGraw-Hill.					
3.	Kothandaraman, C.P, "Fundamentals of Heat and Mass Transfer", 2015, New Age International, New Delhi.					
Mode of assessment: Continuous assessment, FAT, Oral examination						
Recommended by Board of Studies				09-03-2022		
Approved by Academic Council				No. 65	Date	17-03-2022