

HEAT TRANSFER LAB

Course Code	23ME3603	Year	III	Semester	II
Course Category	Professional Core	Branch	ME	Course Type	Lab
Credits	1.5	L-T-P	0-0-3	Prerequisites	Basic Thermodynamics
Continuous Internal Evaluation:	30	Semester End Evaluation:	70	Total Marks:	100

Course Objective: The laboratory course is aimed to provide the practical exposure to the students with regard to the determination of amount of heat exchange in various modes of heat transfer including condensation & boiling for several geometries.

PART-A

1. Determination of overall heat transfer co-efficient of a composite slab
2. Determination of heat transfer rate through a lagged pipe.
3. Determination of heat transfer rate through a concentric sphere
4. Determination of thermal conductivity of a metal rod.
5. Determination of efficiency of a pin-fin
6. Determination of heat transfer coefficient in natural and forced convection
7. Determination of effectiveness of parallel and counter flow heat exchangers.
8. Determination of emissivity of a given surface.
9. Determination of Stefan-Boltzmann constant.
10. Determination of heat transfer rate in drop and film wise condensation.
11. Determination of critical heat flux.
12. Determination of Thermal conductivity of liquids and gases.
13. Investigation of Lambert's cosine law.

PART-B

Virtual labs (<https://mfts-iitg.vlabs.ac.in/>) on

- (i) Conduction Analysis of a Single Material Slab
- (ii) Conduction Analysis of a single Material Sphere
- (iii) Conduction Analysis of a single Material Cylinder
- (iv) Conduction Analysis of a Double Material Slab
- (v) Conduction Analysis of a Double Material Sphere
- (vi) Conduction Analysis of Double Material Cylinder
- (vii) To determine the overall heat transfer coefficient (U) in the (i) parallel flow heat exchanger and (ii) Counter flow heat exchanger
- (viii) To investigate the Lambert's distance law.
- (ix) To investigate the Lambert's direction law (cosine law).

Note: Virtual labs are only for learning purpose, and are not for external examination.

