JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA–533003, Andhra Pradesh, India
DEPARTMENT OF MECHANICAL ENGINEERING

III Year - II Semester		**L**	**T**	**P**	**C**
		0	**0**	**3**	**1.5**
HEAT TRANSFER LAB					

Course objectives:

1) To determine the heat transfer rate and coefficient.
2) To determine the thermal conductivity, efficiency and effectiveness.
3) To determine the emissivity and Stefan-Boltzman constant.
4) To determine critical heat flux and investigate Lambert's cosine law.
5) To experiment with Virtual labs and analyze conduction, HT coefficient.
6) To experiment with Virtual labs and investigate Lambert's laws.

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

1) Conduction Analysis of a Single Material Slab
2) Conduction Analysis of a Single Material Sphere
3) Conduction Analysis of a Single Material Cylinder
4) Conduction Analysis of a Double Material Slab
5) Conduction Analysis of a Double Material Sphere
6) Conduction Analysis of Double Material Cylinder
7) To determine the overall heat transfer coefficient (U) in the (i) parallel flow heat exchanger and (ii) Counter flow heat exchanger
8) To investigate the Lambert's distance law.
9) To investigate the Lambert's direction law (cosine law).

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

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA–533003, Andhra Pradesh, India
DEPARTMENT OF MECHANICAL ENGINEERING

Course outcomes: Students are expected to learn the concepts and to
CO1: Determine the heat transfer rate and coefficient.
CO2: Determine the thermal conductivity, efficiency and effectiveness.
CO3: Determine the emissivity and Stefan-Boltzman constant.
CO4: Determine critical heat flux and investigate Lambert's cosine law.
CO5: Experiment with Virtual labs and analyse conduction, HT coefficient.
CO6: Experiment with Virtual labs and investigate Lambert's laws.