

Heat Transfer Laboratory

About the Laboratory

The **Heat Transfer Laboratory** is a teaching facility of the Department of Mechanical Engineering that provides students with practical understanding of the fundamental modes of heat transfer, including conduction, convection, and radiation. The laboratory enables students to experimentally study heat transfer phenomena and relate theoretical concepts learned in the classroom to practical engineering applications.

The laboratory is equipped with experimental setups for determining the thermal conductivity of solids, insulating materials and liquids, thermal resistance of composite walls, natural and forced convection heat transfer coefficients, temperature distribution along fins, and radiation properties such as emissivity and the Stefan–Boltzmann constant. Facilities are also available for studying the performance of concentric tube heat exchangers, air-conditioning systems, and solar water heaters.

The laboratory primarily supports undergraduate teaching and helps students develop practical skills in temperature measurement, heat transfer analysis, experimental data collection, calculation of heat transfer parameters, and performance evaluation of thermal systems. The experiments provide a strong foundation for understanding the design and operation of heat exchangers, thermal insulation, cooling and heating systems, refrigeration and air-conditioning systems, and renewable thermal energy systems.

Faculty In-Charge

Dr. Avadesh Yadav

Technical Staff

- **Mr. Rahul**

Laboratory Courses

Course Code	Course Name	Programme
MEPC-313	Heat Transfer Lab	B.Tech.

Major Equipment

Equipment	Quantity	Utilization
Thermal Conductivity of Metal Rod Apparatus	01	B.Tech.
Thermal Conductivity of Insulating Powder Apparatus	01	B.Tech.
Composite Wall Apparatus	01	B.Tech.
Natural Convection Heat Transfer Apparatus	01	B.Tech.
Forced Convection Heat Transfer Apparatus	01	B.Tech.
Pin Fin Apparatus	01	B.Tech.
Concentric Tube Heat Exchanger	01	B.Tech.
Stefan–Boltzmann Constant Apparatus	01	B.Tech.
Computerized Air-Conditioning Test Rig	01	B.Tech.
Emissivity Measurement Apparatus	01	B.Tech.
Thermal Conductivity of Liquid Apparatus	01	B.Tech.
Solar Water Heater	01	B.Tech.

Laboratory Photographs

Natural Convection Apparatus



Emissivity Measuring Apparatus



Heat Pipe Demonstrator



Lagged Pipe Apparatus



Stefan Boltzmann Apparatus



Thermal Conductivity of Liquid



Drop & Film Wise Condensation



Plate Type Heat Exchanger



Heat Transfer in Agitated Vessel



Shell & Tube Heat Exchanger



Finned Tube Heat Exchanger

