

THERMAL LAB

EXPERIMENTS

- **Temperature Measurement**
 - Solid, liquid, and gaseous medium
 - Glass bulb, Type-K thermocouple, RTD, Infra-red laser gun thermometer.
- **Heat Exchanger Series**
 - Shell and tube
 - Concentric tube
 - Plate type
 - Radiator Fan
 - Parallel flow, Counter flow
 - Cross flow, Turbulent flow
- **Boiling Heat Transfer Unit**
 - Film wise condensation
 - Drop wise condensation
- **Conduction Heat Transfer Unit**
 - Thermal conductivity of Copper, Steel, building materials.
 - Linear, Radial
- **Convection & Radiation Heat Transfer Unit**
 - coefficient of convection & radiation
 - Free vs. Forced Convection
- **Compressed Air cycle Trainer**
 - Thermodynamic cycle
- **Heat Pump**
 - Coefficient of performance
- **Solar Collector**
 - Energy conversion efficiency
- **Hot Air Engine**
 - PV diagram
 - Efficiency

This laboratory course introduces students to the concepts of engineering measurement and experimentation in the thermal sciences. It develops physical understanding through experimentation as students analyze raw data and organize the results into a comprehensive lab report.

Major Equipment

- Trainer on Thermodynamic Cycle of Compressed Air
- Heat Pump
- Solar Collector
- Hot Air Engine
- Temperature Measurement Bench
- Heat Exchanger Series
(Shell and tube, plate type, concentric tube, radiator fan)
- Heat Transfer Series
(Conduction, Convection & Radiation, Boiling heat transfer)

