SRI PADMAVATI MAHILA VISVAVIDYALAYAM
(WOMEN'S UNIVERSITY)
TIRUPATI-517502.

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING

HEAT TRANSFER LAB

Key Features :
Heat transfer is the science dealing with the transfer of energy in the form of heat from one body to another as a result of temperature difference between them. . These fundamentals will be used to link the phenomenological Heat transfer processes taking place in different engineering equipment. . The lab consists of equipment for the measurement of thermal conductivity, convective and radiation behavior of different types of materials and objects in various conditions. This lab provides knowledge to the students about various concepts of heat transfer by doing experimentation successive to the theory class.

S.No.	Name of the Experiment	Specification and Key Equipment Details	Equipment Photo
1.	Heat Transfer Through Lagged Pipe	MILD STEEL 01. PIPES : a) Diameter : 50/100/150 mm dia(approx) b) Length : 500 mm (Approx.) c) Material : M.S. d) Quantity : 1 No. each 02. a)Digital Voltmeter, Range : 0 to 300 V b) Digital Ammeter, Range : 0 to 10 Amps c) Digital Temp. Indicator with selector switch: Ambient to 199.9 deg.c. 03. THERMOCOUPLES a) Type : Cr.Al. b) Length : 1 Mtr 04. DIMMERSTAT a) Make : Sungrace /Agro / Equivalent	

2	Composite Slab Apparatus Overall Heat Transfer Coefficient	MILD STEEL, ASBESTOS & COPPER SLABS a) Thickness : 150 OD 6 mm Thick 02. MEASURING INSTRUMENTS a) Digital Voltmeter, Range : 0 to 300 V b) Digital Ammeter, Range : 0 to 10 Amps c) Digital Temp. Indicator with selector switch: Ambient to 199.9 deg.c. 03. THERMOCOUPLES: a) Type : Cr.Al. b) Length : 1 Mtr 04. DIMMERSTAT a) Make : Sun grace/Agro / Equivalent	
3	Heat Transfer Through A Concentric Sphere	01. OUTER SPHERE (TOP AND BOTTOM) a) Diameter : 20 cm b) Material : Copper 02. INNER SPHERE (TOP AND BOTTOM) a) Diameter : 10 cm b) Material : Copper 03. MEASURING INSTRUMENTS a) Digital Voltmeter, Range 0 to 300 V b) Digital Ammeter, Range : 0 to 10 Amps c) Digital Temp. Indicator with selector switch, Range : Ambient to 199.9 deg.c. 04. THERMOCOUPLES a) Type : Cr. Al. b) Length : 1 mtr. 05. DIMMERSTAT a) Make : Sun grace /Agro / Equivalent	
4	Stefan Boltzman Apparatus	01. STEFAN BOLTZMAN SECTION a) Hemisphere Diameter : 200 mm Material : Copper b) Outer Jacket Diameter : 250 mm Material : Copper c) Hylum Base Plate : 12 mm thick d) Test disc Size : 20 mm dia x 1.5 mm thick 02. WATER TANK WITH IMMERSION HEATER a) Material : S.S. 03. DIGITAL TEMPERATURE INDICATOR WITH SELECTOR SWITCH a) Range : Ambient to 199.9 deg.c. 04. THERMOCOUPLES a) Types : Cr. Al. b) Length : 1 Mtr.	

5	Emissivity Measurement Apparatus	01. PLATES a) Diameter : 150 mm b) Material : Brass c) Heater : 250 W d) Specimen : Black Body and Grey Body 02. RECTANGULAR DUCT a) Material : M.S. with Powder Coating front Acrylic 03. MEASURING INSTRUMENTS a)Digital Voltmeter, Range : 0 to 300 V b)Digital Ammeter, Range : 0 to 10 Amps c) Digital Temp. Indicator with selector switch. : Ambient to 199.9 deg.c. 04. THERMOCOUPLES a) Type : Cr.Al. b) Length : 1 Mtr 05. DIMMERSTAT a) Make : Sungrace /Agro / Equivalent	
6	Parallel Flow / Counter Flow Heat Exchanger	01. GEYSER a) Capacity : 3 KW 02. HEAT EXCHANGER OUTERPIPE INSULATED BY ASBESTOS ROPE a) Diameter : 25 mm b) Material : G.I. 03. HEAT EXCHANGER INNER PIPE a) Length : 1000 mm b) Diameter : 12.5 mm OD c) Material : Copper 04. DIGITAL TEMPEATURE INDICATOR WITH SELECTOR SWITCH a) Range : Ambient to 199.9 deg.c. 05. THERMOCOUPLES a) Type : Cr.Al. b) Length : 1 Mtr 06. MEASURING JAR : 1 Ltr. Capacity	
7	Heat Transfer in Forced Convection Apparatus	01. BLOWER a) Capacity : 350 watts / 1.5 cumts/m 02. TEST SECTION a) Diameter : 40 mm b) Length : 300 mm 03. MEASURING INSTRUMENTS a)Digital Voltmeter, Range : 0 to 300 V b)Digital Ammeter, Range : 0 to10 Amps c)Digital Temp. Indicator with selector switch. : Ambient to 199.9 deg.c. 04. THERMOCOUPLES a) Type : Cr.Al. b) Length : 1 Mtr 05. DIMMERSTAT. a) Make : Sungrace /Agro / Equivalent 06. ‘U’ TUBE MANOMETER : 1 No. a) Material : Glass	

8	Heat Transfer in Natural Convection	01. S.S. CYLINDRICAL TUBE a) Diameter : 40 mm b) Length : 400 mm 02. MEASURING INSTRUMENTS a)Digital Voltmeter, Range : 0 to 300 V b)Digital Ammeter, Range : 0 to 10 Amps c) Digital Temp. Indicator with selector switch. : Ambient to 199.9 deg.c. 03. THERMOCOUPLES a) Type : Cr.Al. b) Length : 1 Mtr 04. DIMMERSTAT a) Make : Sungrace /Agro / Equivalent	
9	Heat Transfer from Pin-Fin	01. BLOWER a) Capacity : 350 watts / 1.5 cu mts/m 02. TEST SECTION a) Diameter : 12 mm b) Length : 150 mm c) Material : Brass 03. DUCT a) Size : 100 x 150 x 500 mm b) Material : MS with Powder Coating 04. MEASURING INSTRUMENTS a) Digital Voltmeter, Range : 0 to 300 V b) Digital Ammeter, Range : 0 to 10 Amps c) Digital Temp. Indicator with selector switch : Ambient to 199.9 deg.c. 05. THERMOCOUPLES a) Type : Cr.Al. b) Length : 1 Mtr 06. DIMMERSTAT a) Make : Sungrace /Agro / Equivalent 07. ‘U’ TUBE MANOMETER : 1 No.	

Lab Incharge

Dr.J.Venkatesu Naik