CDL State Institute of Engineering and Technology
Panniwala Mota (Sirsa)
Mechanical Engineering Department
HEAT TRANSFER (LAB)

General Course Information

Course Code: PCC-ME307-P Course Category: Professional Core Course Course Credits: 1.0 Mode: Practical Contact Hours: 02 hours per week	Course Assessment Methods (internal: 30; external: 70): Internal practical evaluation is to be done by the course coordinator. The end semester practical examination will be conducted jointly by external and internal examiners.

Course Outcomes

Sr. No.	Course Outcome	RBT Level
CO1	Students will be able to define and relate different modes of heat transfer.	L1
CO2	Students will be able to describe, explain and compare the mechanisms of heat transfer.	L2
CO3	Students will be able to apply the basic principles of heat transfer in daily routine thermal systems and can demonstrate its working.	L3
CO4	Students will be able to examine and compare the operations of various heat transfer devices.	L4
CO5	Students will be able to evaluate the performance of various heat transfer devices.	L5
CO6	Students will be able to design and select a better heat exchanging/transfer device under given conditions.	L6

Experiments in HT Lab

1. To determine the thermal conductivity of a metallic rod.

2. To determine the thermal conductivity of an insulating power.

3. To determine the thermal conductivity of a solid by the guarded hot plate method.

4. To find the effectiveness of a pin fin in a rectangular duct natural convective condition and plot temperature distribution along its length.

5. To find the effectiveness of a pin fin in a rectangular duct under forced convective and plot temperature distribution along its length.

6. To determine the surface heat transfer coefficient for a heated vertical tube under natural convection and plot the variation of local heat transfer coefficient along the length of the tube. Also compare the results with those of the correlation.

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7. To determine average heat transfer coefficient for externally heated horizontal pipe under forced convection & plot Reynolds and Nusselt numbers along the length of pipe. Also compare the results with those of the correlations.

8. To measure the emissivity of the gray body (plate) at different temperature and plot the variation of emissivity with surface temperature.

9. To find overall heat transfer coefficient and effectiveness of a heat exchange under parallel and counter flow conditions. Also plot the temperature distribution in both the cases along the length of heat of heat exchanger.

10. To verify the Stefen-Boltzmann constant for thermal radiation.

11. To demonstrate the super thermal conducting heat pipe and compare its working with that of the best conductor i.e. copper pipe. Also plot temperature variation along the length with time or three pipes.

12. To study the two phases heat transfer unit.

13. To determine the water side overall heat transfer coefficient on a cross-flow heat exchanger.

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Course Articulation Matrix (CO to PO/PSO Mapping)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	**3**	**3**	2	1	-	2	**1**	**1**	**1**	2	**1**	**3**	**3**	**3**	1
CO2	**3**	**3**	2	**1**	-	2	**1**	**1**	**1**	2	**1**	**3**	**3**	**3**	1
CO3	**3**	**3**	2	**1**	-	2	**1**	**1**	**1**	2	**1**	**3**	**3**	**3**	1
CO4	**3**	**3**	**3**	2	-	2	**1**	**1**	2	2	**1**	**3**	**3**	**3**	**1**
CO5	**3**	**3**	**3**	2	-	2	**1**	**1**	2	2	**1**	**3**	**3**	**3**	**1**
CO6	**3**	**3**	**3**	2	-	2	**1**	**1**	2	2	**2**	**3**	**3**	**3**	**2**

1 :(Slight /Low), 2:(Moderate/Medium), 3 :(Substantial/High)