

19AME66 – HEAT TRANSFER LAB

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Course Objectives: The objectives of the course are to make the students learn about

- Understand different modes of heat transfer
- Gain knowledge about natural and force convection phenomenon
- Estimate experimental uncertainty in measurements

List of Experiments

1. Determine the overall heat transfer coefficient across the width of composite wall
2. Determine the thermal conductivity of a metal rod
3. Determine the thermal conductivity of insulating powder material through concentric sphere apparatus
4. Determine the thermal conductivity of insulating material through lagged pipe apparatus
5. Determine the efficiency of a pin fin in natural and forced convection.
6. Determine the heat transfer coefficient for a vertical cylinder in natural convection
7. Determine the heat transfer coefficient in forced convection of air in a horizontal tube.
8. Determine the heat transfer coefficients on film and drop wise condensation apparatus.
9. Determine the effectiveness of a parallel and counter flow heat exchanger.
10. Study the pool boiling phenomenon and different regimes of pool boiling.
11. Experiment on pool boiling
12. Determine the emissivity of the test plate surface.
13. Experiment on Stefan-Boltzmann apparatus
14. Determine the heat transfer rate coefficient in fluidized bed apparatus

Course Outcomes:

At the end of this Course the student will be able to

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| • Explain different modes of heat transfer | L1 |
| • Identify parameters for measurement for calculating heat transfer | L1 |
| • Determine effectiveness of heat exchanger | L5 |
| • Design new equipment related to heat transfer | L5 |
| • Apply principles of heat transfer in wide application in industries. | L3 |

