Course Code	Course Name	Credits
MTL403	**Thermal and Fluid Engineering Lab**	**01**

Objectives

1. Verify the Bernoulli's principle.
2. To familiarize concept of pipe flow.
3. To familiarize concept of thermal conductivity, heat transfer coefficient.
4. To familiarize heat balance in heat exchanger.

Outcomes: Learner will be able to…

1. Verify the Bernoulli's principle and calibration venturimeter / orificemeter.
2. Calculate friction factor & different losses in the pipe flow
3. Estimate thermal conductivity of metals/non-metals.
4. Compute heat transfer coefficient in natural as well forced convection

Part A: Suggested List of laboratory experiments (Minimum 8):

1. Verification of the Bernoulli's theorem.
2. Determination coefficient of discharge for venturimeter / orificemeter
3. Determine the friction factor for Pipes.
4. Determination of minor losses in Pipe systems.
5. Comparison of thermal conductivity of a metal rod and insulating material.
6. Comparison of heat transfer coefficient of free and forced convection.
7. Verification of Stefan Boltzmann Law.
8. Estimation of overall heat transfer coefficient and effectiveness of double pipe heat exchanger (parallel flow and Counter flow arrangement)
9. Study of Boiler cross section
10. Study of Pelton Turbine

Part B: Industrial visit at any type of Power Plant

Term Work:

Term work consists of performing minimum 08 practical mentioned as above. Final certification and acceptance of the term work ensures satisfactory performance of laboratory work.

The distribution of marks for term work shall be as follows:

- Laboratory work (Experiment/journal) : 15 marks.
- Industrial Visit Report : 05 marks.
- Attendance (Theory and Practical) : 05Marks

End Semester Examination:

Pair of Internal and External Examiner should conduct Oral examination based on entire syllabus.