



# द्रव यांत्रिकी व यंत्र प्रयोगशाला

## Fluid Mechanics and Machines Lab

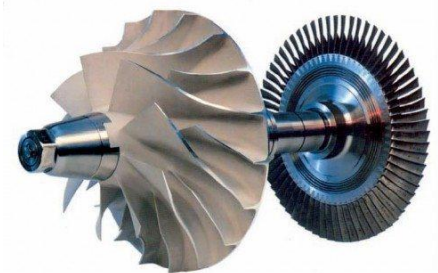
### Major Equipments:

- Pelton Turbine Test Ring
- Francis Turbine Test Ring
- Kaplan Turbine Test Ring
- Venturi Meter Apparatus
- Orifice Meter Apparatus
- Rectangular Notch Apparatus
- Metacentric Height Apparatus
- Pipe Friction Apparatus
- Bernoulli's Apparatus
- Reynolds's Apparatus.
- Centrifugal Pump Test Rig.
- Reciprocating Pump Test Rig
- Gear Pump Test Rig.



### Measuring Instruments:

Digital Tachometer, Stop Watch



#### In Charge

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#### Associate In Charge

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#### Physical In Charge

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# द्रव यांत्रिकी व मशीन प्रयोगशाला

## Fluid Mechanics and Machines Lab

### **SAFETY AND SECURITY RULES TO BE FOLLOWED IN LABORATORY:**

1. Always wear shoes before entering in the lab.
2. Do not touch anything without the permission of instructor/ lab assistant.
3. Read carefully the lab manual before performing experiments.
4. Do not tamper measuring instruments.
5. Do not open the casing of the equipment.
6. Switch off the power supply to the experimental setup on completion of the experiment.
7. Maintain clean and orderly laboratories and work area.
8. Be aware of the various experiment controls (start button, stop button, speed control) for each experiments.
9. Do not leave experiments running unattended.
10. Any injuries should be reported immediately for proper care.

### **GENERAL INSTRUCTIONS**

1. Enter lab with closed footwear.
2. Boys should tuck in the shirts.
3. Long hair should be protected, let it not be loose specially near rotating machineries.
4. Any other machines/ equipments should not be operated other than the prescribed one for that day.
5. Power supply to your test table should be obtained only through the lab technician/ instructor.
6. Read carefully the lab manual before performing experiments.
7. Do not lean and do not be close to the rotating components.
8. Tools, apparatus and gauge sets are to be returned before leaving the laboratory.
9. Headings and detail should be neatly written:
  - (i) Aim of the Experiment.
  - (ii) Apparatus / Tools / Instruments Required.
  - (iii) Procedure / Theory / Algorithm/ Program.
  - (iv) Model Calculations.
  - (v) Neat Diagram/ Flowcharts.
  - (vi) Specification / Design Details.
  - (vii) Tabulation.
  - (viii) Graph.
  - (ix) Result / Discussions.
10. Before doing the experiment, the student should get the circuit/ program approval by the faculty in charge.
11. Experiment date should be written in the appropriate place.
12. After completing the experiments the answer to the viva voice questions should be neatly written in the workbook..



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## Fluid Mechanics and Machines Lab

(120304/190304)

### LIST OF EXPERIMENTS:

#### Fluid Mechanics:

1. To calculate the coefficient of discharge of a given Venturimeter.
2. To determine the hydraulic coefficient  $C_d$ ,  $C_v$  and  $C_c$  of Orifice meter.
3. To determine the Darcy's Friction coefficient experimentally.
4. To calculate the Viscosity of given oil through Redwood Viscometer.
5. To determine the critical velocity of flow through pipe (Color Filament Method)
6. To calculate the Critical Reynolds's Number through Pipe Set Apparatus.
7. To determine the Meta Centric Height of a ship model under a (a ) unloaded and (b) loaded condition.
8. To study the flow over a Notch (rectangular and triangular ) and to find the coefficient of discharge for it.

#### Fluid Machines:

1. To conduct load test on a Pelton wheel turbine and to study the characteristics of Pelton wheel turbine.
2. To conduct load test on a Francis turbine and to study the characteristics of Francis turbine.
3. To study the characteristics of a Kaplan turbine.
4. To study the performance characteristics of a centrifugal pump and to determine the characteristic with maximum efficiency
5. To study the performance characteristics of a reciprocating pump and to determine the characteristic with maximum efficiency.
6. To study the performance characteristics of a gear pump and to determine the characteristic with maximum efficiency.