

## INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous) Dundigal, Hyderabad - 500 043

## DEPARTMENT OF MECHANICAL ENGINEERING

## FLUID MECHANICS AND HYDRAULICS MACHINES LABORATORY

This laboratory introduces students practical knowledge of behavior of fluids which they are earlier studied by using mathematical equations. It involves study of various properties of the fluid, such as velocity, pressure, density and temperature as functions of space and time. Fluid mechanics is the branch of physics which deals with the properties of fluids, namely liquids and gases, and their interaction with forces. The lab is equipped with different flow measuring set-ups such as venturimeter, orifice-meter, mouth piece, rotometer, flow through pipes, centrifugal pumps, turbines. where students can visualize the basic theory of working of the flow meter.

## **List of Equipment**

| Kaplan Turbine Test Rig Pelton Wheel Test Rig Francis Turbine Test Rig | CES<br>CES  | 1   | 1,36,500   | 1,36,500   |
|--|---|---|--|--|
|  |   | 1   |  | 1,50,500   |
| Francis Turbine Test Rig   |   | 1   | 1,26,000   | 1,26,000   |
|  | CES   | 1   | 1,19,385   | 1,19,385   |
| Flow through external mouth pieces                                     | Mechtrix<br>Engineers   | 1   | 55,945   | 55,945   |
| Flow through wires and Notches   | Mechtrix<br>Engineers   | 1   | 32,130   | 32,130   |
| Single-stage centrifugal pump  | CES   | 1   | 28,917   | 28,917   |
| Multi-stage centrifugal pump   | CES   | 1   | 28,917   | 28,917   |
| Impacts of jet on vanes  | CES   | 1   | 24,570   | 24,570   |
| Venturi meter Apparatus  | CES   | 1   | 23,814   | 23,814   |
| Friction through a Pipe<br>Apparatus                                   | CES   | 1   | 22,113   | 22,113   |
| Reciprocating Pump Test Rig  | CES   | 1   | 22,113   | 22,113   |
| Bernoulli's Apparatus  | CES   | 1   | 18,711   | 18,711   |
| Tachometers- Model<br>HTM 590 TO5DZV0003                               | HTM   | 4   | 1,506  | 6,024  |
| Stop watches   | Racer   | 4   | 1,000  | 4,000  |
| Total Cost (Rs.)   |   |   |  |  |
|  | pieces Flow through wires and Notches Single-stage centrifugal pump Multi-stage centrifugal pump Impacts of jet on vanes Venturi meter Apparatus Friction through a Pipe Apparatus Reciprocating Pump Test Rig Bernoulli's Apparatus Tachometers- Model HTM 590 TO5DZV0003 Stop watches | pieces  Flow through wires and Notches  Single-stage centrifugal pump  Multi-stage centrifugal pump  Impacts of jet on vanes  Venturi meter Apparatus  Friction through a Pipe Apparatus  Reciprocating Pump Test Rig  Bernoulli's Apparatus  Tachometers- Model HTM 590 TO5DZV0003  Stop watches  Engineers  Mechtrix Engineers  CES  CES  CES  CES  Tendineers  CES  HTM  Racer | Pieces Engineers 1 Flow through wires and Mechtrix Engineers 1 Notches Engineers 1 Single-stage centrifugal pump CES 1 Multi-stage centrifugal pump CES 1 Impacts of jet on vanes CES 1 Venturi meter Apparatus CES 1 Friction through a Pipe Apparatus CES 1 Reciprocating Pump Test Rig CES 1 Bernoulli's Apparatus CES 1 Tachometers- Model HTM 590 TO5DZV0003 Stop watches Racer 4 | Flow through external mouth pieces         Mechtrix Engineers         1         55,945           Flow through wires and Notches         Mechtrix Engineers         1         32,130           Single-stage centrifugal pump         CES         1         28,917           Multi-stage centrifugal pump         CES         1         28,917           Impacts of jet on vanes         CES         1         24,570           Venturi meter Apparatus         CES         1         23,814           Friction through a Pipe Apparatus         CES         1         22,113           Reciprocating Pump Test Rig         CES         1         22,113           Bernoulli's Apparatus         CES         1         18,711           Tachometers- Model HTM 590 TO5DZV0003         HTM         4         1,506           Stop watches         Racer         4         1,000 |

(In words: Rupees Six lakhs forty nine thousand one hundred and thirty nine only)