

Overview of Laboratory #2

1. Water Wall - **OBSERVATION**
 2. Pipe Friction and Pressure Drop Experiment – **COLLECT DATA**
 3. Transition from Laminar to Turbulent Flow – **OBSERVATION**
 4. Water Turbine (called a “Pelton Wheel”) – **OBSERVATION**
 5. Water Tank Discharge Coefficient (called “Torricelli’s Experiment”) – **COLLECT DATA**
 6. Write-Up: Memo with comments about each; completed data sheets; plots
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1. Water Wall - **OBSERVATION**

Instructor will operate this – it’s tricky to get the siphon tubes to work correctly.

Read the questions on the placards, and try to predict the answers. Then, observe the flows and answer the following questions.

- a. Which module did you find most interesting? Why?

- b. Which module most reinforced class material? How did it help?

2. Pipe Friction and Pressure Drop Experiment – **COLLECT DATA**

- a. See attached instructions and data sheet.
- b. Do 3 or 4 runs – no need to do all 9.
- c. Roles: Valve turner, manometer reader, data recorder, person to say “go”
- d. NOTE: Shaded areas – for experimental data. Unshaded areas – for calculated values based on your experimental data.

3. Transition from Laminar to Turbulent Flow – **OBSERVATION**
 - a. Turn on the hose tap and add dye to the container on top. Vary the flowrate (you can adjust the drain valve too). Try to find a flowrate where the dye remains in a smooth line. Then increase it until the dye breaks up and mixes with the water.

4. Water Turbine (called a “Pelton Wheel”) – **OBSERVATION**
 - a. Adjust the flowrate, jet velocity, and load in order to make the water leave the “cups” in different directions – forward, backward, to the side. Note the flowrate, jet pressure, and load for each.

5. Water Tank Discharge Coefficient (called “Torricelli’s Experiment”) – **COLLECT DATA**
 - a. See attached instructions and data sheet. Do 3 or 4 runs.
 - b. Roles: Timekeeper, Watercatcher, Distance measurer, person to say “go”

NOTE: Shaded areas – for experimental data. Unshaded areas – for calculated values based on your experimental data.