

Lab. Session

Elementary Fluid Mechanics

Instructor: Seo, Il Won (35-310) / T.A.: Jung, Sung Hyun (35-504)

Tel: +82-2-880-7356; e-mail: jsungh@snu.ac.kr Web: www.ehlab.re.kr

Description Laboratory experiments are designed to help students to understand concepts of mechanics of real fluids. It aims to give intuition and visualization for fluid phenomenon to students who are taking elementary fluid mechanics course. Experimental session consists of two parts, i.e. elementary tests (Hydrostatic Pressure, Visualization of the Flow Patterns, Free & Forced Vortex, Bernoulli's Theorem Experiment) and student designed tests (Application of the Continuity Equation with Closed Conduit Flow, A Hydraulic Jump Phenomenon in Open Channel Flow, Energy Losses in Bends, Sediment Transport in Channel, Flow and Pollutant Transport in Meandering Channel).

Remarks

- Each group consists of five students.
- Experiment class will be conducted biweekly.
- Two groups will perform and switch between two different tests in two class sessions.
- Students can choose and perform one of the five student-designed tests*.
- Preliminary reports should be submitted before an experiment. And final reports should be submitted after an experiment.
- A Final report needs to include the below
 - Contents: objectives, theoretical background, procedure, results, and discussion
 - Deadline: 2 weeks after lab. session
- 5 minutes and 10 minutes are given in the proposal and final presentation for the student designed test respectively.

Student designed tests*

Each group can choose one of the tests listed below.

- ST1. Application of the continuity equation with a closed conduit flow
- ST2. A hydraulic jump phenomenon in open channel flow
- ST3. Energy losses in bends
- ST4. Sediment transport in channel
- ST5. Flow and pollutant transport in meandering channel

Schedule

Week	Contents
1-2	Introduction
3-4	Hydrostatic Pressure
5-6	Visualization of the Laminar Flow
7	ST – Proposal Presentation
8-9	ST – Experiment
10-11	Free and Forced Vortex
12-13	Bernoulli's Theorem Experiment
14	ST – Final Presentation