

Course Name	Code\No.	Number of Credits			
		Theo.	Lab.	Train.	Credit
Open Channel Flow	HWR 323	2	2	-	3
Pre-Requests	HWR 212				

**Course Objectives:**

Introduce the basic concepts and its applications in the study of flow in open channels.

**Course Contents:**

1. General characteristics of open channels: Properties of open channels, types of flow.
2. Uniform flow: Introduction, Chezy equation and Manning equation.
3. Principles of energy and momentum in open channels: Energy principals, specific energy, momentum principles, critical flow theory and its applications.
4. Design of open channels cross sections: lined channels, best hydraulic section.
5. Rapidly varied flow: hydraulic jump and hydraulic fall.
6. Gradually varied flow: introduction, equation of flow, backwater curve profiles, and its computations.
7. Unsteady flow: introduction, surges, flood routing.
8. Laboratory experiments: Calculation of discharge, hydraulic jump, flow under gates and over weirs.

**Course outcomes:**

It is expected that the student will get the following knowledge and experience :

- get acquainted with varies topics in open channel flow.
- How to perform open channel Computations: Uniform flow, gradually Varied flow, and rapidly Varied flow.
- Design of open channel.
- Performing Experimental measurements in laboratory flume.

**Evaluation Method:**

Student can be evaluated upon monthly exams, final exam and class homework, class discussions as well as lab experiments and lab reports.

**References:**

- Hamil, L.(1995) Understanding hydraulics, Mc Millan Pres, Ltd.
- **Chow, V.T., Maidment, D.R. and May, L.W.**(1988) Applied hydrology, McGraw Hill Book Company.
- **Featlerstorn, R.E. and Nallunls, C.**(1982) Civil engineering hydraulics theory with worked examples, Granada Publishing Ltd.
- **Gupta, R.S.** (1989). Hydrology and hydraulics systems. Prentice-Hall, Inc
- **Henderson, F.M** (1966) Open channel flow , Macmillan Publishing Co. Inc
- **Linsley, R.K., and Frargni** (1979) Water resources engineering, McGraw Hill kogakusha LTd.