



Course Outline

open channel Hydraulics

Course Title	OPEN CHANNEL HYDRAULICS			
Course code	CEng3153			
Degree Program	B.Sc. in civil engineering			
Module Name	Fundamental of Hydraulics			
Instructor Name	Name: Getnet Solomon (BSc in water resource & irrigation engineering) Office location Engineering College Building Mobile :+251 945149300 e-mail: getnetsol475@gmail.com Consultation Hours: to be arranged at beginning of class			
Course Information	Academic Year 2011 E.c Year : III Semester: I Meeting Day: To be arranged at the beginning of the semester Meeting Time: To be arranged at the beginning of the semester Meeting Location: To be arranged at the beginning of the semester			
ECTS	5			
Weekly Contact Hours/ Students' work load	Lecture	Tutorial	Practice or Laboratory	Home study
	30	10	45	50
Course Objectives & Competences to be Acquired	<ul style="list-style-type: none"> ➤ Flow computations: critical flow, uniform flow. ➤ Gradually varied flow: differential equations of gradually varied flow; gradually varied flow profiles, computations of gradually varied flow ➤ Rapidly varied flow: flow characteristics, flow over spillways, flow under gates, hydraulic jump and its use as energy dissipater. ➤ Sediment transport and design of stable channels: sediment transport in open channels, hydraulic properties of sediments, mode of sediment transport, design 			
Pre-requisites	Hydraulics-I & Hydraulics-II			

CHAPTER ONE: OPEN CHANNEL FLOW

1.1. OPEN CHANNEL FLOW AND ITS CLASSIFICATIONS

1.2 basic hydraulic principles

1.3 specific energy and critical depth

1.4 flow computation formulas

CHAPTER TWO: GRADUALLY VARIED FLOWS (GVF)

2.1 General Equation for Gradually varied flow

2.2 Classification of Flow Profiles

2.3 GVF Computations

2.3.1 The direct step method (distance from depth)

2.3.2 Graphical Integration

CHAPTER THREE: RAPIDLY VARIED FLOW (RVF)

3.1 RVF VS GVF

3.2 Flows over Spillways



3.3 Hydraulic Jump and Its Use as Energy Dissipater

3.4 Flow Under gates

CHAPTER FOUR: SEDIMENT TRANSPORT IN OPEN CHANNELS

4.1 Characteristics of Sediment

4.2 Hydraulic properties of Sediment

4.3 Mode of Sediment Transport

4.4 Design of Stable Channel

CHAPTER FIVE: CREATING WATER PROFILES USING EXCEL OR RELATED SOFTWARES

Assessment/Evaluation System/

10% Quiz = Chapter 1, 2, 3,& 4

10% lab report

30% mid exam =chapter 1, 2&3

50% Final-exam = All chapters

Material availability: references materials are expected to be available in the library nearest to respective faculties.

Policy Attendance: students should attend the class at least 85% and 100% of Practical sessions (Laboratory practices)

Assignments: all students must do all the assignments that are given by the lecturers.

Tests/quizzes: all students must site/take all tests/quizzes which are given by the lecturer

Cheating/plagiarism: cheating/plagiarism is strictly forbidden. It will result in disqualification of the course.

Reference

- Henderson, F. M. *Open Channel Flow*, Macmillan,
- Subhash C. Jain. (2000). *Open Channel Hydraulics*, John & Wiley.
- Hubert Chanson (2004), *Hydraulics of Open Channel Flow*.