

University of Engineering and Technology, Taxila
Department of Civil Engineering

Course Title: Hydraulic Engineering (CE-409)

Pre-requisite(s): Fluid Mechanics-I, Fluid Mechanics-II

Credit Hours: 2 + 1

Contact Hours: 2 + 3

Text Book(s):

1. Elementary Hydraulics by James Cruise and VP Singh
2. Irrigation Engineering and Hydraulic Structures by Santosh Kumar Garg

Reference Book(s):

1. Open Channel Flow by Terry Sturm
2. Open Channel Flow by Subramanya
3. Hydraulics in Civil and Environmental Engineering by Chadwick

Course Objectives:

Understanding the mechanical behavior of flowing water, developing capability of understanding flow characteristics in uniform/non-uniform/unsteady and spatially varying situations, to understand sediment transport, similitude and water power engineering.

Course Learning Outcomes:

CLO 1: Understanding mechanics of flowing water and thus become an engineer capable of controlling damage caused by flooding

CLO 2 : Analysing different hydraulic structures such as dams, barrages, culverst, weirs, notches etc

CLO 3: Understanding complicated hydraulic phenomena such as hydraulic jump, conjugate depths, specific energy etc.

CLO 4 : Application of the fluid mechanics principals to open channel flow

Course Contents:

- Specific Energy diagram and its importance
- Specific Energy diagram and its importance
- Gradually varying flow in open channels
- Gradually varying flow in open channels
- Rapidly varying flow in open channels

- Unsteady and spatially varying flow in open channels
- Similitude in open channel flows
- Water power engineering
- Sediment transport and deposition
- Dam Engineering

Grading Policy:

Sr. No.	Grading	% of Total Marks
1	Assignments	10
2	Quizzes	10
3	Practical /Lab Work	20
4	Midterm Exam	20
5	Final Exam	40
Total		100

PLOs	CLOs			
	CLO-1	CLO-2	CLO-3	CLO-4
PLO 1	✓			
PLO 2		✓		
PLO 3		✓		
PLO 4			✓	
PLO 5				✓
PLO 6			✓	
PLO 7				
PLO 8				
PLO 9				
PLO 10				
PLO 11				
PLO 12				

Assessment Modules		CLOs			
		CLO 1	CLO 2	CLO 3	CLO 4
Assignments	(10%)	✓	✓	✓	✓
Quizzes	(10%)	✓	✓	✓	✓
Practical/Lab	(20%)	✓	✓	✓	✓
Midterm Exam	(20%)	✓	✓	✓	✓
Final Exam	(40%)	✓	✓	✓	✓