

## Faculty of Engineering & Technology

### Hydraulic Engineering

#### Information :

**Course Code :** SCM 461      **Level :** Undergraduate      **Course Hours :** 4.00- Hours

**Department :** Department of Structural Engineering & Construction Management

#### Instructor Information :

Title	Name	Office hours
Professor	Yasser Mohamed Sadek Abdel Aziz El Saie	9
Assistant Lecturer	MOHAMMED TAHER ABDELHAMID MOHAMMED YOUSSEF	
Teaching Assistant	Ahmed Taher Abdelhamed Mohamed Yousef	

#### Area Of Study :

Upon successful completion of this course, the student should be able to: - Understand the basic concepts and main principles - Calculate the values of the essential terms - Apply Codes provisions  
Regarding open channel specific energy rapidly and gradually flow pipes network water hummer pumps

#### Description :

Open channel flow: types of flow, conservation laws of mass and energy, specific energy concept, flow resistance in channels, sketching and calculations of water surface profile for gradually varied flow, design of cross sections in open channels, momentum equation and specific force concept, design of stilling basins downstream of gates and pipe outlets, physical models, Introduction to river engineering and sediment transport, Pumps: types and characteristics of pumps, pumps and pipeline systems, Hydraulics of groundwater: types of aquifers, groundwater flow.

#### Course outcomes :

##### **a.Knowledge and Understanding: :**

1 -	a1- Explain the principals of open channel
2 -	a2- Define the main terms of rapidly and gradually flow
3 -	a3- List the main items of pipes network
4 -	a4- Define the main terms of water hummer
5 -	a5- List the main items of pumps

##### **b.Intellectual Skills: :**

1 -	b1- Calculate the values of open channel
2 -	b2- Solve problems regarding specific energy
3 -	b3- Solve problems regarding rapidly and gradually flow
4 -	b4- Analyze the system of pipes network
5 -	b5- Solve problems regarding water hummer
6 -	b6- Analyze the system of pumps

**c. Professional and Practical Skills :**

1 -	c1- Draw neat details of pipes network
2 -	c2- Prepare technical reports for pumps

**d. General and Transferable Skills :**

1 -	d1- Work under stress
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**Course Topic And Contents :**

Topic	No. of hours	Lecture	Tutorial / Practical
open channel	12	6	6
specific energy	12	6	6
rapidly and gradually flow	18	9	9
Pipes Network	18	9	9
Water Hammer	12	6	6
Pumps	12	6	6
Revision	6	3	3

**Teaching And Learning Methodologies :**

Interactive Lec.  
Discussion  
Problem Solving  
Report / Presentation

**Course Assessment :**

Methods of assessment	Relative weight %	Week No	Assess What
Final Examination	40.00		
Mid- Exam I, II	30.00		
Quizzes / Assig.	15.00		
Report / Present	15.00		

**Course Notes :**

Lecture Notes

**Recommended books :**

Water Hwang, N. H. C.; "Fundamentals of Hydraulic Engineering Systems". Prentice Hall, 1981  
French R.H.; "Open Channel Hydraulics"; McGraw Hill, 1984  
Chow V.T.; "Open Channel Hydraulics"; McGraw Hill, 1977  
Ray Linsley, Joseph Franzini, David Freyberg, George Tchobanoglous; "Water Resources Engineering", 1988