

<p style="text-align: center;"><b>ISHIK UNIVERSITY</b>  <b>FACULTY OF ENGINEERING</b>  <b>Department of CIVIL ENGINEERING,</b>  <b>2018-2019 Fall</b>  <b>Course Information for CE 430 DESIGN OF HYDRAULIC STRUCTURES</b></p>						
<b>Course Name:</b>		DESIGN OF HYDRAULIC STRUCTURES				
<b>Code</b> CE 430	<b>Course type</b> 2	<b>Regular Semester</b> 8	<b>Theoretical</b> 3	<b>Practical</b> -	<b>Credits</b> 3	<b>ECTS</b>
<b>Name of Lecturer(s)- Academic Title:</b>		Alan Abubaker - MA Barham Haydar - MSc				
<b>Teaching Assistant:</b>		-				
<b>Course Language:</b>		English				
<b>Course Type:</b>		Area Elective				
<b>Office Hours</b>		14:00-15:00 Saturday, 08:30 am to 12:00				
<b>Contact Email:</b>		alanabgh@gmail.com barham.haydar@ishik.edu.iq  Tel:07701438369 07705042603				
<b>Teacher's academic profile:</b>		BB.Sc. Civil Engineering, M.Sc. Dams and Water Resource - Engineering/ University of Salahaddin-Erbil MSc holder in construction materials				
<b>Course Objectives:</b>		The course aimed to get a quiet enough amount of knowledge about the types ,functions and importance of hydraulic structures such as dams and barrages .The criteria of design and analysis for many cases will be covered .The students will be able to read the contour and topo maps which required for design purposes. The forces applied for structures will be calculated and considered in design. The course will lead the students to be able to carry out the design of structures and analyzed the results to check the stability and safety				
<b>Course Description (Course overview):</b>		Types of structures. Design of weirs and diversion weir. Farm irrigation structures; ditches, checks, turnouts, drops and chutes. Flumes. Culverts and bridges. Trash racks and screens, sand traps. Design of canalet networks. Design of irrigation appurtenances. Design of dams and reservoirs. Gravity, buttress, arch and earth dams. Design of spillways and energy dissipating basins. Design of service reservoirs.				
<b>COURSE CONTENT</b>						
<b>Week</b>	<b>Hour</b>	<b>Date</b>	<b>Topic</b>			
1	3	2-4/10/2018	Introduction			
2	3	7-11/10/2018	Basics of Concrete Dams Design			
3	3	14-18/10/2018	Empty Reservoir Case Design			
4	3	21-25/10/2018	Full Reservoir Case Design			
5	3	28/10-1/11/2018	Applications			
6	3	4-8/11/2018	Basics of Earth Dams Design			
7	3	11-15/11/2018	Seepage line with and without filter			
8	3	18-22/11/2018	Midterm Exam			
9	3	25-29/11/2018	Applications			
10	3	2-6/12/2018	Failure analysis due to sliding			
11	3	9-13/12/2018	Applications			
12	3	16-20/12/2018	Failure Analysis due to sudden draw down of water			

13	3	23-24/12/2018	Applications
14	3	2-3/1/2019	Principles of Spillway Design
15	3	7-10/1/2019	General Preview
16	3	13-17/1/2019	Final Exam
17	3	20-24/1/2019	Final Exam
<b>COURSE/STUDENT LEARNING OUTCOMES</b>			
1	Criteria of Concrete Dams Design		
2	Analysis of the dam		
3	Design of Earth dams		
4	Analysis of Earth Dams		
<b>COURSE'S CONTRIBUTION TO PROGRAM OUTCOMES</b> (Blank : no contribution, I: Introduction, P: Profecient, A: Advanced )			
<b>Program Learning Outcomes</b>			<b>Cont.</b>
1	An ability to apply knowledge of mathematics, science, and engineering		I
2	An ability to design and conduct experiments, as well as to analyze and interpret data		P
3	An ability to design a system, component, or process to meet desired needs		P
4	An ability to identify, formulate and solve engineering problems		I
5	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice		P
6	Skills in project management and recognition of international standards and methodologies		P
7	An ability to function on multi-disiplinary teams		I
8	An understanding of professional and ethical responsibility		P
9	An ability to communicate effectively		P
10	The broad education necessary to understand the impact of engineering solutions in a global and social context		I
11	A recognition of the need for and ability to engage in, lifelong learning		I
12	A knowledge of contemporary issues		I
<b>Prerequisites (Course Reading List and References):</b>		1-Statics 2-Fluid Mechanics 3-Hydraulics	
<b>Student's obligation (Special Requirements):</b>		The students should be have an acceptable level of knowledge about forces exerted by water on structures and how the behavior of these forces will affects the design and safety of structures.	
<b>Course Book/Textbook:</b>		Design of Hydraulic Structures By NOVAK	
<b>Other Course Materials/References:</b>		Design of Irrigation and Hydraulic Structures By Santosh Kumar	
<b>Teaching Methods (Forms of Teaching):</b>		Lectures, Excersises, Project, Case Studies	
<b>COURSE EVALUATION CRITERIA</b>			
<b>Method</b>		<b>Quantity</b>	<b>Percentage (%)</b>
Attendance			
Participation			
Quiz		2	5
Project		2	10
Final Exam		1	40
	<b>Total</b>		<b>70</b>
<b>Examinations:</b> Essay Questions, True-False, Fill in the Blanks, Multiple Choices, Short Answers, Matching			

**Extra Notes:**

<b>ECTS (ALLOCATED BASED ON STUDENT) WORKLOAD</b>			
<b>Activities</b>	<b>Quantity</b>	<b>Duration (Hour)</b>	<b>Total Work Load</b>
Course Duration (Including the exam week: 16x Total course hours)	3	48	144
Hours for off-the-classroom study (Pre-study, practice)			0
Assignments Mid-terms	1	2	2
Final examination	1	2	2
Other			0
<b>Total Workload</b>			<b>148</b>
<b>ECTS Credit (Total workload/25)</b>			<b>5.92</b>

**Peer review**

Signature:

Name:

Lecturer

Signature:

Name:

Head of Department

Signature:

Name:

Dean