

Hydraulic Structure

Course Description Form

1. Course Name:	
Hydraulic Structure	
2. Course Code:	
CIV42106	
3. Semester / Year:	
Second semester / fourth year	
4. Description Preparation Date:	
1 ST September 2025	
5. Available Attendance Forms:	
The. 3 hr	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45hours / 2 unit	
7. Course administrator's name (mention all, if more than one name)	
Name: Hussien Ali Hussien Email: hussein.a.hilfi@muc.edu.iq	
8. Course Objectives	
Course Objectives	Types of hydraulic structures and their use, Regulators, Hydraulic calculation of regulators, Line of creep and uplift pressure, Flow net, Floor thickness, Transitions, Energy dissipation, Gates, Weirs.
9. Teaching and Learning Strategies	
Strategy	Present and discuss real-life cases Presenting and discussing exceptional cases Raising mathematical problems and dilemmas, discussing them, solving them in more than one way, and comparing different methods Establish discussion groups Asking students to submit scientific reports on topics of their choice
10. Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	Th.:3	Identify and classify the types of hydraulic structures and explain their functions and applications.	Types of hydraulic structures and their use	Lectures	Tests, quizzes and reports
2	Th.:3	Understand the purpose and design principles of regulators in hydraulic systems.	Types of hydraulic structures and their use	Lectures	Tests, quizzes and reports
3	Th.:3	Perform hydraulic calculations for the design and analysis of regulators.	Regulators	Lectures	Tests, quizzes and reports
4	Th.:3		Regulators	Lectures	Tests, quizzes and reports
5	Th.:3		Hydraulic calculation of regulators	Lectures	Tests, quizzes and reports
6	Th.:3		Hydraulic calculation of regulators	Lectures	Tests, quizzes and reports
7	Th.:3		Hydraulic calculation of regulators	Lectures	Tests, quizzes and reports
8	Th.:3	Analyze the line of creep and uplift pressure for hydraulic structures and apply safety measures in design.	Line of creep and uplift pressure	Lectures	Tests, quizzes and reports
9	Th.:3		Line of creep and uplift pressure	Lectures	Tests, quizzes and reports
10	Th.:3	Construct and interpret flow nets to analyze seepage and pressure distribution.	Flow net	Lectures	Tests, quizzes and reports
11	Th.:3	Evaluate the required floor thickness and structural stability for hydraulic structures.	Floor thickness	Lectures	Tests, quizzes and reports
12	Th.:3	Design effective transitions in hydraulic systems to minimize energy losses.	Transitions	Lectures	Tests, quizzes and reports
13	Th.:3	Explain energy dissipation	Energy dissipation	Lectures	Tests, quizzes and reports

		techniques and apply them in hydraulic structures design.			
14	Th.:3	Understand the design and functionality of gates and weirs in regulating water flow	Gates	Lectures	Tests, quizzes and reports
15	Th.:3	Apply theoretical knowledge to practical scenarios and problem solving in hydraulic engineering	Weirs	Lectures	Tests, quizzes and reports

11. Course Evaluation

The grade distribution is as follows:

Assessment: Formative 40 marks

Final exam: Theory 60 marks

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Santosh Kumer Greg 1997, "Irrigation Engineering and Hydraulic Structures", 2 nd Edition.
Main references (sources)	R. K. Sharma 3 rd Edition 2008, "Irrigation Engineering".
Recommended books and references (scientific journals, reports...)	K. R. Arora, 4 th Edition 2009, "Irrigation, water power and water resources engineering".
Electronic References, Websites	