Republic of Iraq

Ministry of Higher Education and Scientific Research
Supervision and Scientific Evaluation Apparatus

College: Shatt Al-Arab University College
Department: Civil Engineering
Stage: 4th stage
Lecturer name: Mr. Qasim Muhammed
Academic title: Assist. Lecturer

Course Weekly Outline

Name	**Mr. Qasim Muhammed**		
E-mail address			
Course name	Sanetary Sewage		
General course objective	1. compute the quantity of potable water for a specific city, 2. select the appropriate piping material, 3. analyze and design water networks, 4. design water pumping stations, 5. design water treatment systems. 6. compute the quantity of sanitary sewage for a specific city, 7. compute the quantity of storm water, 8. design sanitary sewer system, 9. design storm sewer system, 10. design sewage treatment systems. 11. design sludge treatment systems		
Course description / special objectives	Water use, variations of water consumption rates, design period, population estimate, fire demand, ductile iron pipes, PVC pipes, steel pipes, concrete pipes, HDPE pipes, GRP pipes, flow in water pipelines, analysis of water networks using Hardy-Cross method, design of water networks, types of water pumping stations, types of pumps, power of pumping, system head curve, pump characteristics curves, pumps connection, pumps selection, water treatment, rapid mix unit, coagulation process, flocculation unit, sedimentation unit, filtration unit, disinfection unit		
References	McGhee, T.J., "Water Supply and Sewage", 6th Ed., McGraw Hill, Tokyo, 1991.		
External sources	Viessman, W., Hammer, M.J., Perez, E,M,, Chdik, P.A., Water supply and pollution control, 6th Ed., Pearson Education Limited 2014.		
Course assessment	**Assignments and quizzes**	**Midterm Exam**	**Final exam**
	40	**10**	**50**
General notes			

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Week No.	Theoretical	Unit-chapter	Aims
1	Quantity of water: Water use; variations in rates of water consumption; design period;		1. compute the quantity of potable water, 2. recognize the materials used in piping works, 3. design water pumping stations, 4. design water treatment systems, 5. assess the environmental impact of untreated sewage discharge, 6. compute the quantity of sanitary sewage,
2	population estimate; fire demand.		
3	Piping materials: Ductile iron piping works; PVC piping works; steel piping works; concrete		
4	piping works; HDPE piping works; GRP piping works; valves.		
5	Water distribution systems: Description of water distribution systems; analysis and design		
6	of water distribution systems.		
7	Water pumping stations: Types of pumping stations; types of pumps; pumps power; system		
8	head curve; pump characteristics curves; pumps connection; pumps selection.		
9	Water treatment: Aim of water treatment; description and design of Intake structure;		
10	description and design of rapid mix unit; coagulation process		
11	Water treatment: description and design of flocculation unit; sedimentation process;		
12	description and design of sedimentation unit		
13	Water treatment: description and design of filtration systems; description and design of		
14	disinfection systems.		
15	Mid-term Exam; Quantity of sanitary sewage and storm water		