Urban Hydrology

Code	Credit Hours
URP 903	3-0

Course Description

The objective of the course is to highlight the importance of learning a combination of specific knowledge-based on urban hydraulics; planning, operation, maintenance, rehabilitation, and management techniques to develop policies / plans for sustainable water resources.

Textbooks:

1. Mays, L.W., Storm Water Collection Systems Designs Handbook, McGraw-Hill, (2001).
2. David Butler and John W. Davies (2004) Urban Drainage
3. Geaffrey F. Read (2004), Sewers Replacement and New Construction

Reference Books:

1. C., Twort et.al. (1974). Water Supply, Edward Arnold, London
2. George Tehobanoglous et. al., (2002). Wastewater Engineering; Treatment and Reuse, (4th Edition), McGraw Hill

Prerequisites

Graduate level courses of Civil Engineering and City & Regional Planning, Architecture, Environmental Engineering

Assessment System for Theory

Quizzes	10-15%
Assignments	5-10%
Mid Terms	25-30%
ESE	40-45%
Term Project	10-15%

Teaching Plan

Week No	Topics	Learning Outcomes
1-3	Sources and Distribution of Water	Introduction to the course, learning objectives, teaching plan, and assessment methods. What is an urban water cycle? What are the sources and distribution of water in urban environment, including surface reservoir requirement, utilization of ground water and distribution systems?

4-5	Drainage and Sewer Systems	Introduction to the Urban Wastewater Management Analysis of sewer systems and drainage courses for the disposal of both wastewater and storm water.
6-8	Integrated Water Management	Approaches to Urban Drainage, Water Quality, Wastewater, Rainfall, Storm Water system Components and Layout, Hydraulics Features, Foul Sewers, Storm Sewer, Storage, Structural Design and Constructions, Sediments, Operation/ Maintenance and Performance, Rehabilitation, Flow / Quality Models, Storm Water Management, Integrated Management and Control, Sustainability
9	**MID SEMESTER EXAM**	
10-12	Urban Stormwater Management	Rainfall for Urban Storm Water design, urban run-off process, Design of Storm Water Drainage Systems, Quality of run-off, Effects of Urbanization on runoff quantity and quality, Urban-Storm Water Management, Sewer Safety.
13-15	Pumps and Lifting Stations	Technical guidelines to design drinking water supply in urban areas. Calculation of water demand and building groundwater pumping stations, water treatment plants. Design considerations for drainage systems. Requirement for pumping and lifting stations for storm and wastewater management.
16-17	Urban Planning and Strom Drainage	Land use plans, urban layouts and natural water drainage channels. Low Impact Development Erosion and Sediment Control Green Infrastructure
	END SEMESTER EXAM	