

Course Name:

Water Supply and Sewerage

Course Number:

20621

Credit:

3

Prerequisite:

Environmental Engineering

Course Description (Objectives):

The primary objective of this course is introducing the planning, design and construction of water distribution and wastewater collection systems. The course is focused on the three main topics:

- Water distribution systems which covers estimation of urban water consumption, hydraulic design of water distribution networks, water storage and pumping systems and the analysis of water quality in the distribution systems.
- Wastewater and surface runoff collection that will introduce the main sources of wastewater and runoff production, hydraulic design of waste water collection systems and surface water drainage system in urban area, and the design of the related structures.
- Integrated urban water management.

Course Content (outline):

- Introduction and goals.
- Urban water analysis:
Water consumption and the principle of population estimation, per capita consumption and factors affecting it, demand estimation, water quality, corrosion and sedimentation and water storage.
- Analysis and design of water distribution network:
Water distribution network hydraulics, network analysis and water hammer.
- Analysis and design of Pumping systems:
Pump models, pump selection and pumping stations.
- Simulation and analysis of water quality in the distribution network:
Wastewater flow analysis (qualitative features, hydraulics of wastewater collection system, factors affect wastewater production) and corrosion of wastewater pipes.
- Urban Hydrology:
Management and control of the urban stormwater runoff, urban drainage channel design and stormwater runoff storage.

- Design of the wastewater and the stormwater runoff collection systems and design of wastewater pumping stations.
- Integrated urban water management.

References:

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- آبرسانی شهری، ۲ جلد، جلال آشفته، شماره راهنما در کتابخانه مرکزی: TD.481.A85، 1361.
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- Water and Wastewater Engineering, M., L., Davis, McGraw-Hill Book Co, Call number: TD346.D38 (Electronic resources), 2010.
- Water Supply and Pollution Control, W. Viessman and M. J. Hammer, Call number: TD353.V54 2005, 2005.
- Wastewater Engineering: Collection and Pumping of Wastewater, G. Tchobanoglous, Metcalf & Eddy, Call number: TD645.M57, 1981.
- Water Supply and Sewerage, E. W. Steel and T. J. McGhee, McGraw-Hill Book Co, Call number: TD345.M33, 1991.
- Frontiers in Urban Water Management, C. Maksimovic, and A. T. Guibert, IWA Publishing Co., 2001.