**ENV E 421 SYLLABUS**

COURSE NAME: Municipal Systems- ENV E 421
DETAILS: 3 hour lectures, 3/2 hour Lab
TERM: Fall

COURSE DESCRIPTION

\*3.8 (fi 8) (either term, 3-0-3/2) Detailed and advanced design of water supply systems, sewerage, and

storm drains. Rates of flow and hydraulics of networks and sewers, rainfall-runoff analysis, storm water

storage, and loads on conduits. Extensive computer simulation of systems.

REQUIRED MATERIAL

Akan, A. Osman; Houghtalen, Robert J. 2003. Urban Hydrology, Hydraulics, and Stormwater Quality -

Engineering Applications and Computer Modeling. John Wiley & Sons.

Alberta Environment. Multiple Years. Standards and Guidelines for Municipal Waterworks, Wastewater and

Storm Drainage Systems. Edmonton, Alberta: Standards and Approvals Division, Municipal Engineering

Branch. Available online as an Adobe pdf at:

http://esrd.alberta.ca/water/programs-and-services/drinking-water/legislation/standards-and-guidelines.aspx

Alberta Environment. 1999. Stormwater Management Guidelines for the Province of Alberta. Edmonton,

Alberta: Standards and Approvals Division, Municipal Engineering Branch. Available online in as an Adobe

pdf at: http://environment.gov.ab.ca/info/library/6786.pdf

ASCE/EWRI/WEF, 2007. Gravity Sanitary Sewer Design and Construction. 2nd Ed. ASCE. Reston VA.

Jones, G.M., 2008. Pumping Station Design. Revised 3rd Ed. Elsevier. Burlington MA, USA. E-text via U of

A library website.

Mays, L. 2000. Water Distribution Systems Handbook. McGraw-Hill Book Co. E-text via U of A library

website.

Shammas, N. K. and Wang, L.K. (2011). Fair, Geyer, and Okun's Water and Wastewater Engineering :

Water Supply and Wastewater Removal. 3rd Ed. John Wiley and Sons.

Walski, T. M. et al. 2013. Computer Applications in Hydraulic Engineering (8th ed.) Bentley Institute Press.

Exton PA.

LECTURE CONTENT

|  |  |
| --- | --- |
| **Week of** | **Topic** |
| Sept. 2 | Introduction to municipal systems; Drinking water distribution. |
| Sept. 9 | Population and water demand forecasting; Water distribution network modelling. |
| Sept. 16 | \*Invited speaker from EPCOR Water Services Inc. (Securing a raw drinking water supply); Pumps and pumped system hydraulics. |
| Sept. 23 | Pump system hydraulics (concluded); Water distribution network materials and appurtenances; (midterm exam cut-off) - Wastewater flow estimation; |
| Sept. 30 | Sewer appurtenances; Depressed sewers; Invited speaker from EPCOR Water Services Inc. (Distribution system water quality issues and assurance). |
| Oct. 7 | Mid-Term review; Loads on buried pipes. |
| Oct. 14 | Thanksgiving; Loads on buried pipes (concluded); |
| Oct. 21 | Midterm Exam (Oct. 21); Stormwater flow estimation; Storm sewer design. |
| Oct. 28 | Pavement drainage; Stormwater management. |
| Nov. 4 | Invited speaker from the City of Edmonton Drainage Dept. (Edmonton’sdrainage system- conveyance and flood control). Major storm water systems. |
| Nov. 11 | Fall term Reading Week |
| Nov. 18 | Stormwater best management practices. |
| Nov. 25 | Stormwater quality; Sewer maintenance; Invited speaker from the City ofEdmonton Drainage Dept. (Edmonton’s drainage system – pollution control). |
| Dec. 2 | Odour control; Final review. |

LAB CONTENT

**Laboratory Schedule**

|  |  |
| --- | --- |
| **Laboratory Topic** | **Date** |
| Group D1 | Group D2 |
| Distribution Network Design | Sept. 13 | Sept. 20 |
| Distribution Network Analysis | Sept. 27 | Oct. 4 |
| Storm Sewer Design and Analysis | Oct. 25 | Nov. 1 |
| Stormwater Pond Design and Analysis | Nov. 22 | Nov. 29 |